

DRAGON



USER

July 1987

The independent Dragon magazine

Contents

Letters

Pixel corner ... CoCo conversions ... CGP ... C64 and M64 problems ... Cards on Amiga and Amigauser ... Keep flying.

News

Commodore developing new OS-8 buffer ... H.C. Anderson's Superputer II for Commodore ... South Bay Computer Club show in ... book after next month ... copyright software ... Commodore group.

Dragon Soft

Music Maker from John Pena, Discount Software ... Micro's Dream from Microgen ... Separated from Quickbeam.

Take ten printers

Add one and you have eleven. You also have the largest survey of Dragon-compatible printers ever presented by Dragon User and its readers.

Expert's Arcade Arena

Real Eclipse map from Joe Brazil ... keeping Dragon Master Plus ... strategy routine for Moon Cresta ... using the RBBT code.

When is an Epson...

Not all Epsons are like all other Epsons. Following Paul Dilley, B. Yerman Miller looks at codes for the other ones.

2 Moving programs

Mike Hines moves machine code without losing a pixel.

Dragon Answers

Pixel colours from XY ... success conversion ... break key disease for Tandy ... renumbering large programs ... finding Commodore ROMs.

Winners and losers

Gordon Lee goes over the techniques for solving the February competition, with comments from entrants.

Write: ADVENTURE

Peter German takes his dictionary and begins to build a vocabulary.

The Answer

Gordon Lee's own solution to the April puzzle will appear next month.

Adventure Trail

Drop in the heart of a Colossal Cave (written Pete German's Uncle Elmer, who seems to be finding something...)

Competition

Gordon Lee describes how to divide and conquer, but ends on a happier note — the prize is Music Maker.

Editorial

JULY rolls round again — one year since DRAGON USER quit the newsletters and went private. I don't mind saying that we were threatened with closure by well meaning folk. Who would raise (no a year? Where would our 'passing trade' go? Wouldn't everyone assume that the Dragon was no more? weren't we going to take the money and run?

They should have said — and run, and run, and run. Yup, we're still running, spite of all the doomy predictions. As for the 'Dragon is dead'; well, we're still getting people just starting on their first Dragon, phoning up to find out how they can subscribe.

Some people forget that there's no such thing as a dead machine as long as there's a live user. AND the Dragon has a roster of committed dealers, sticking to their guns.

Just like Dragon User. SO DON'T FORGET TO RENEW YOUR SUBSCRIPTIONS! The lights are staying on all over Europe. We might even replace that sticky fluorescent tube over my desk...

How to submit articles

The quality of the material we can publish in Dragon User each month will, to say great detail, depend on the quality of the submissions that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of BASIC, but with very poor documentation.

Articles which are submitted to Dragon User for publication should not be more than 3000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please bring a copy. If you want to have your program returned you must include a stamped addressed envelope.

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Letters

Round six

CONCERNING the review in the March issue about Fire Power, the comments of Jason Crisium are mostly correct, in that the game does appear to be lame, and that the game is extremely hard. What I disagree with is that it is bug ridden, as the program runs perfectly with excellent graphics and good sound.

Right help all players (Dave Hitchman could tell us which joystick he uses in the game, an opportunity given us due to the lack of using the gun, will have spent many hours attempting the game and have yet to complete the first stage.

Tom Mankell
21 Gladys-Y-Olden
Gains
Surrey
Surrey
Surrey
Surrey

We dropped Dave a line, and his reply: "With regard to your letter of 13.3.87 (use a reply to 2) As for helping people off I can say is that it comes with practice. Regards, Dave H." Just like that!

CoCo convert

IN the April '87 issue of DU I found the article by Rudy Duyck about CoCo2Dragon. Basic conversion tools are estimated useful. However, there is one important detail that he didn't mention. A CoCo (Basic) program cannot be LOADed from disc by a Dragon unless the CoCo disc is modified. To use the program described by Mr. Duyck, one has to transfer the CoCo disc program to tape using a CoCo machine's LOAD command. This is not really much faster than just making an ASCII copy to tape from the CoCo disc, in which case the full conversion is not needed. If you use either of these methods, your friends with CoCo will be grateful to you for making the copies to tape.

An unmodified CoCo disc cannot be LOADed by Dragon because the CoCo disc directory is on a different track from that on the Dragon disc (i.e. the

This is the chance to air your views — send your tips, compliments and complaints to Letters Page, Dragon User, 19-21 Little Newport Street, London WC2C 3NP.

Every month we will be shelling out a game or two, courtesy of Microseal, to the readers who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What do you think we are, invited readers?

EXTRA
PUFF

Reviewer's wrights

ENCLOSED is a little poem which outlines the hardships of the game reviewer. Please consider this as a gift from Software City. Never mind, Jason, it's hard on the top!

S.J. Docters, 18-22 Stephen Road, Peckham, Nr. Wellingborough, Northants NN10 2AS, UK

"What a pest you can be,
A 'Dragon User' reviewer,
With only plain
Info read anachore
And take stick from harassed viewers.

Games pour in
They're up to my chin
The Ed's deadline is tomorrow,
It was yesterday, actually!
Or tomorrow's a DOA!
Not only the Does (Sod — Sod)
Who wants to be a reviewer?"

Mr. Crisium from out his heap
Cries, "What does CoCo reviewer?
His piles aren't half as high as mine
And how come he's got time to review?
His explained must be low!"

"You mentioned rhymes", there said the Ed,
"We had to fit a few in.
'Tempter's not yet dead word,
(But it's better than 'reviewer.'")

directory formats are different) the file headers are different & the disc allocation maps are on different tracks and in different formats. If I have modified CoCo discs to be LOADed by a Dragon and will be glad to send a copy of my procedure to anyone interested if they will supply an international return postage certificate to cover mailing costs.

I have submitted to DU for over two years and find it to be very helpful. Also, I am a member of the MUDUS and the OS8US and both of these organisations have provided much useful information and help as well as support for the Dragon.

Randy Langstone
15047 Cheshire Drive
Doverfield
MC60047
USA

of each record can be printed:
=S117P10011201(RLM)+1.
In the same issue there was a spreadsheet program called Analyse by L. P. T. This listing has parentheses that need to be converted to double quotes when you load and save the spreadsheet. By changing the start of lines 6 and 7 a cure can be affected:

6:POKA = 65170704POKE\$10,A,
POKA = 7099,etc.
7:POKA = 65170704POKE\$10,A,
POKA = 7099,etc.

When trying to load in a saved sheet from tape use the =E10000 can be prevented by changing line 1001 and adding the two extra lines:

168:POKE\$4,8 + 0:0005/84
18:EOF(-1) THDNH8
167:NEWT2,X
168:PR11/84

Mike Hines

23 Coniston Road
Orrell/Moss House
Orrell, L3 9LY, UK

THANKS for the useful information. We have had several enquiries about Analyse which Lother Pitt is holding. Some of them mentioned little typos/garbage on the part of the enquirers — if it's long way to go, UK, to get your listings double checked, so please triple check 'em before you write to G.U.

Tagging along

IN THE November issue of Dragonfile D. Rutherford posted out one of the shortcomings of McWayne's Fileman program. The problem is that when you with bought a file, and use the same name, the program just tags the updated file onto the end of the old file rather than KILLING the old file first. By changing the following lines in the program called OLDFILE, the problem appears to be cured.

530: M88 + H88 + "DAT",
531: M88:FILE#1:H88:P1,
532: P1: D88 + H88 + THEN
533: C88:H88:ERRGOTO
534: C88:CODE
By adding the following line to the same program, the number

VAT vex

CONGRATULATIONS on your article by D. Rutherford called OS-8 Does. It was nice to see something written just for the OS-8 users. I am sure there are many other OS-8 fans elsewhere delighted to read the article, especially those with Sysline load problems. Let's hope that this is the first of many OS-8 articles to be published in Dragonfile.

One OS-8 problem I have is with the CASH + VAT program, and I was hoping that through the columns of your magazine I may be able to locate anybody involved with the writing of the original program. I am unable to use the Computer Support Forum of Wards, where wrote CASH + VAT for DragonData, so if there is any reader out there who can give me a lead I would be most grateful.

Davidson Robins
64, Endeavour Road
Nottinghy, Berlin

News desk

Offer next month

LOOK out for a special offer on Dragon books in the August issue of *Dragon User*. These popular books, now out of print, have come out way in limited quantities. There aren't many of these available. We will be offering them to you at about a third of their original price, with a free game thrown in while stocks last. This is an opportunity to build up your personal Dragon library before the books become unobtainable — at least until the wizard Magtris, creator of the first 8000 games from sleep-be-care, Caren Puthausgege and conjugates into existence the long awaited Dragon 3G. Dragon users who don't want to wait until the Millennium have only to wait until August, when further details will be furnished. Some users may bring something about DIY Home Accounting with the parts were included, as well. More next month.

50 years in a vault

A RE MINDFIR from the National Software Register that an author's copyright, although it exists from the moment a program comes into existence, can be successfully proved if the author cannot prove that it existed at a particular time — for instance, if another author copies and sells or publishes it before the original writer can do so.

The National Software Register will store two copies of your program confidentially and supply a numbered certificate for each program.

Further details from The National Software Register, 239 Chancery Lane, Bristol, Middle, EN3 1RA.

There are, of course, other ways to prove that a program exists in your possession at a certain date. The simplest is to mail a copy of the program to yourself by registered mail (where the date is confirmed) then store the package in a safe place UNOPENED unless and until you have a hearing about possession and have it opened by the courts, or some other authority legally authorized to hear the contents of the package. Make sure the postmark is clear, and keep the posting or stamp for luck.

This is simpler than having the program witnessed by a Notary or notarized notary, and just as effective (nothing as you don't losing).

Contrary to popular belief, copyright doesn't mean if not the material displays a copyright (Copyright or any other indication). The little symbols simply a warning to other people that this is copyright material. Copyright always with an author (or

less until the wizard Magtris, creator of the first 8000 games from sleep-be-care, Caren Puthausgege and conjugates into existence the long awaited Dragon 3G. Dragon users who don't want to wait until the Millennium have only to wait until August, when further details will be furnished. Some users may bring something about DIY Home Accounting with the parts were included, as well. More next month.

utilise or the right to assign it to somebody else or just 50 years after the death of the author.

The Hi-Pots say that they will store your programs until 50 years after your death.

Disc Super-writer

HANS CHRISTIAN ANDERSEN Software of Denmark would like to say that they now have Dragon Data's Superwriter 2 converted for disc.

"The new text editor exactly wanted Dragon Users to know this, because some people have been wondering," said the chairman HCA, "The disc can also be loaded into memory and then saved and loaded to another disc."

The package will cost £30.00 plus post and packing. Watch *Dragon User* for further details.

Clang!

Phil Basford and various people on his behalf apologise for a slightly misleading statement of the NOVO 3 subscription — it is £3.50 to join, and £7.50 for subsequent renewals. Also, points out another member, reprints are normally at cost, but are undertaken as cheaply as possible. (National *Dragon User* Group, 8 Naverton Road, Naverton, Sussex.)

If you have any new products for the Dragon — software or hardware — ring the News Desk on 01-437 4543

California CoCo

THE Dragon-user-offices had a visit last week from programmers, hackers and newsletter-creator extraordinaire Andre J. Lavallee from California, bringing news from the South Bay CoCo Club and the National CoCo-Users Group in the States.

South Bay Color Computer Club



The SBCC meet once a month in Torrance and once a month in Long Beach, for demonstrations, lectures and Q&A. Members bring along their

computers, and the club's software library is freely used. The newsletter has info and CoCo news, show reports and programs. The March issue carries a suggestion for a Mid-Cross Data Processing Party on behalf of the US Special

Olympics—the equivalent of the UK Wheatsheaf Olympics, for which the group does a lot of support work, and the May issue suggests a picnic. There's more to all this than software.

The club can be contacted via Andre at 20933 Alameda, Torrance, California, CA 90506, USA. Andre has quite lots of discontinued hardware for sale as well, which would be of interest to US Dragon and CoCo owners.

Buffer

COMPUSENSE are developing a cache buffering utility, ExpressDisk 8, for use with their Dragon Plus and QX-8.

There is no scheduled release date at present. We would be interested in hearing from anyone who uses the Dragonplus/Dragonplus256 and/or passes "with users C or Plus" (say) from Cylpsoft to us in this package and explains it to us. Please understand that the editor is a little grumpy.

Fade out

AS SOON AS QL Just arrived we saw that the listings for the Graphics Screen Wheelprocessor were still unreadable in places. Often the (present) get the listing for the best of things when it isn't their fault, but in this case the page is left in a good condition (as you can see from the final page), so we'll try asking questions.

Anyone who wants a clean photocopy, please drop us a line. No SAE required.

German gruppe

APOLOGIES to the Siegfried Computer Gruppe of Germany for missing their first show on July 20th. We can now make that up somewhat by publishing their existence. They publish a short Ad-magazine, Siegfried Computer, every two months. This is in German (although this issue contains a single cartoon in English).

Contact the club via Bernd Neuland, D-8524 Erlangen-Bruck, Germany or Board 1, Bundesrepublik Deutschland.



Dragonsoft

Compose yourself

Program: Music: Miller
Supplier: John Park Software
Price: £19.95

MUSIC MAESTRO is another program that allows you to write your own tunes in four part harmony. The tunes still sound as synthesized as they did when, for example, Microsoftr's Composer program, but this program is leagues above any other in its field for the simple reason that this is a computer designed for a composer, not a program.

Musically, there's no conversion needed of music into lines of code because all music is entered into a rather nice graphic screen. Nearly anything can be entered, and I haven't found anything missing while I've been inputting my own compositions.

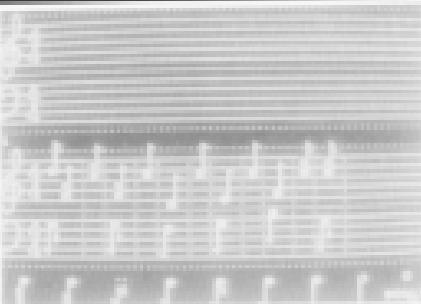
The program is controlled mainly with the cursor keys with

other functions being provided by other appropriate keys, too. It's very easy, too, pretty easy in fact.

It's very difficult to write a long sentence about a program like this because all that you can say is, yes, it sounds pretty yes, it's user friendly, yes, it's graphically easy to read. The only other thing I can really do is give you a list of its capabilities. So here goes.

You can set the key and time signature, enter notes of any length including ties and dotted notes (annoying and treacherous with an option to use power denominators), and a facility to copy notes (not available on the Amstrad). You can enter rests, insert annotations, repeat signs or bars, change the tempo, transpose the musical key, save to and load from tape, play the tune (pretty obvious one that), and put half bars on the start.

New software for review should be sent to Dragon User
13-15 Little Newport Street, London WC2E 7AE.



The unusual feature is very easy keyboard and mouse programs, and the table at the back of the program allows the user who's less well acquainted with the theory of music to enter his own tunes as well.

The really important feature of the program is that any tune written using Music: Miller can be used independently of the

master program within your own programs.

So, summing up, this is the definitive music-writing program for the Dragon. And if you thought Composer was awesome, you simply need get this.

Jason Orbaum



Pennies from above

Program: Who's Dream
Supplier: Microvision
Price: £19.95

Who's Dream is the sort of excellent program that doesn't sell owing to lack of publicity or poor review, but it's been an Amstrad Microvision, but I gather the chap in charge of marketing hasn't figured that you did actually have to pay people's attention to a few hours of play before you get around to paying with cash — £20.

Another game from Jason Paton of Eddie Steady fame, it simply involves collecting coins from the top of ten progressively harder screens, and guiding them northwards by shooting balls at the bottom.

The physics controls a power, or move, bridge, between platforms, either up or down to guide the ball across the bridge, though there are moving platforms to add an element of challenge to all ten stages. One to stop all this is The American Express (a train, not a card), chuffing along across a series of seven screens, which drop coins down as it passes. These destroy any coins that touch them, but can be shot away if you catch them quickly.

Simon Jones

enough. Who's Dream is the Money Spender, which eats any coins it encounters on the way to the pig. This must be filled within the limit, with bonus points equal to remaining time once the pig has been filled.

They start menu allows keyboard control if desired, the keys being redefinable, and a skill level that ranges from 'beginner' to 'Expert'. Then onto the PMODE screen, nicely detailed and laid out, the coins being collected on top ledge to ledge. Again, like Eddie Steady One, achievements look ridiculously easy, while the later ones are quite some careful thought. The result of getting to the tenth screen will have to wait for a true 'expert' to discover though.

This is a very original, definitely a 'just one more go' game, dealing with a subject close to my heart, and results for £19.95, of which price it gives good value for money. A nice finishing touch is that should you beat M.Walton in the Hat of the Flea table, it is possible to reset and save your achievement when you next play.

Mike R. Williams



Go to work with an egg

Program: Superbird
Supplier: Quickbeam
Price: £19.95

TAKE the glasses off, put the hoodies on, get out the capes, and prepare to take the illustrious royal (50.0% IBM) or at least one's younger brother, in this, quite simply the best of Dragon games yet!

You've guessed it. Your objective is to save the damsel in distress, including the various heroes out to destroy your sister's dreams! As Superbird hasn't quite yet mastered the art of flying, things soon get increasingly difficult. The first screen places you prominently behind a series of stairs, which

Take ten printers . . .

... add one, and you have the Dragon User readers' guide to painless printing

Over the months we have received a pile of letters asking for more advice on which printer to buy for the Dragon. So we asked the people who know best - the users, and here's part of the eleven extended reviews of different models by satisfied customers that you can read here.

We have tried to steer you to specific distributors, or to be vigilant about price; there are reliable computer dealers countrywide, and prices vary considerably for many models, and change regularly.

The most important thing you can do, if you are not an electronics whiz, is establish that your dealer can make up and supply (apart from the price if possible, although this is not always an option) the correct connecting cable for the Dragon, and further possibly to demonstrate the printer with your Dragon, ensuring that you understand how to make the correct dip settings.

But you will find all this, and much other good advice, in the reviews which follow.

(Aren't you going to mention the Disc Operating Systems? — Are, Ed! Go away — Ed!)

Amstrad Disc 2000

AMSTRAD who makes to use a Dragon can surely afford a printer, especially when using word processors or spreadsheets. My first printer was a Sankyo 807100. This served me very well while I was simply dumping programs or machine code listings. I have since moved to Flexi-Print using SP-0201 from Compuprint, an excellent word processing package. I therefore needed a better printer. The Amstrad came as the standard fast printer and after seeing a demonstration of decent quality (decided to buy it), in the Comet sale, when it was priced at £44.95, a bargain price for a machine which gives Epson compatibility with both tractor and incident feed.

The DMP2000 is a lightweight machine with a pair of hinged legs underneath so it can accommodate 500 sheets of paper. The paper enters the machine at the front, which also has simple sheet feeding tabs, and the path is flat, so you can print on standard coated, uncoated or record cards etc.

On the right side of this machine is the mains On/Off switch, whilst at the rear is the connection socket and two sets of DIN connectors, used for setting various parameters. These are very clearly described in the manual.

The printer cable supplied is for connection to Amstrad machines, so a Dragon 80 pin to centronics must be obtained, or the supplied cable modified with a Dragon connector. If you have the correct tools and wiring diagram.

On the right side there are three buttons for On-line, Paper-feed and line-feed, together with three indicators for On-line, Paper-out and Power-on. Above these is the tractor/tractor selector lever. I find the machine functions perfectly well with this selector in the tractor position, even with tractor paper. Tractor is easily fitted and at the left end is the print position selector lever.

The manual is very clear. Each printer command is described with an example in four languages, Amstrad, Compuprint, Microsoft Basic and BBC. For Dragon use the Microsoft version, remembering to use PPRNTS-2 in place of LPRINT, and the printer springs to life easily.

(Anybody interested in this model, please send your request to CU with a stamped, self-addressed envelope, and we will pass them on to Frank Philcox — Ed.)

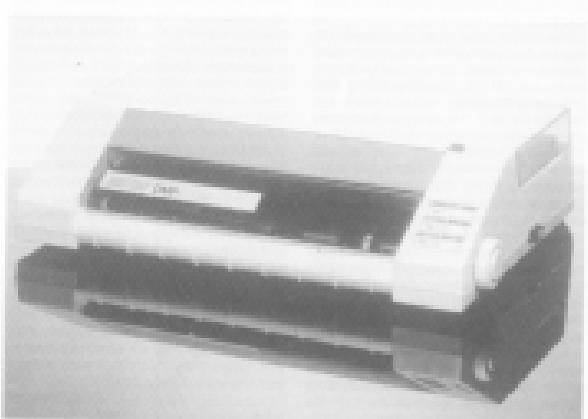
Frank Philcox
Comcast Comet price: £184.95

Amstrad Disc 2000

THESE are some questions in this list that are difficult to answer. Why are we here? Why does MacGowan Consultants connect any 'phones? and why doesn't anyone build printers that load from the front? I find the best help I will have follows you to the printer booth. Friend one is now resolved with the new fast-keyboard from AMSTRAD. How think that name is going to send some of you running for the phone book? RPRNTG**? You look what you've done. You've split our wonderprocessor — did that stop you? All you have tried is:

The people at my local computer shop had been trying to demonstrate once since I mentioned replacing my old Sankyo. I had been put off by the name, but when I was offered the loan of a maypole what could I say?

I could go on about the joys of the front loading paper bin but I won't. I will suffice to say that the machine has a built-in stand, allowing flatbed paper to be placed underneath and retracted behind, and flat loading can be achieved from a sitting position. The model I borrowed was a DMP2000, the new machine developed for the PC-1000. It could be set to default to either of two IBM character sets or Epson F1 standard, selectable by dip-switches. In order to get a fine feed with every carriage return it was necessary either to readjust another dipswitch or to PODE 2002. Print quality is very good if a little funny on Master Letter Quality. All



The Dragon FX capabilities are catered for including auto underline and italics, even commandable characters to allow you to define your own add-ons to the text. All these facilities were carried using Python control codes, so if your microprocessor was written for an Epson it should work with an Amstrad. Some extra characters are available in FX mode making it possible to print in 1 and 2 without switching sets as you could use it with Peter Whittaker's processor (Dragon User September 1985). Another nice touch is that HLG is selectable by control code or manually. This means that I could run off my own copy at draft speed (100 ips) to check before switching to HLG (25 ips) for the finished article.

Graphics capability is outstanding with single, double and multi-pixel density being supported. With all of these there is the choice of right or memory graphics and full details of memory implementation are in the single handbook.

The handbook is less than the size of the Dragon manual and covers everything from using the plug-in control code continuations. Indeed my only criticism of the manual is that it does not actually show how the output will look and nowhere can I find the size of the buffer. I suspect it is about 2K, but it would be nice to know.

The machine comes in two guises, CAMP1000 and CAMP1000E, which cost £199 and £219 respectively. The 2000 has two IBM character sets, the 2000E does not. Which one you choose will depend on your future requirements.

Anyone want to buy a Centronics?

John Brown

List price £199 (CAMP1000) and £219 (CAMP1000E)

Brother M-1000

HELDHQ a printer for correspondence as well as listings, but not the sort that would take over the living room. I visited my local dealer. They have always been willing to demonstrate anything and have a good selection.

The printer I was most impressed with was the Brother M-1000. It is very competitive with my Dragon 30 and has both centronics and PC/COM interfaces if needed. Only a normal printer cable is needed to connect up and this can be purchased from one of the dealers in the Dragon User. The Brother M-1000 is a dot matrix printer with a 9 x 9 print head and in normal mode will print up to 80 characters per line at 50cps. 96 ASCII characters are available and prints in normal or italic in any or a combination of the following ways: as it comes, emphasized, double strike, print, underline and sub script. Underlining in asl asl, margin, line length and skipover are some of the many features available. Double speed, double density and full dot can all be used in 801 image mode.

The Brother M-1000 measures 300 x 190 x 100mm and is less than 800g, so the rest of the family can carry on switching Dallas. The print direction is both bi-directional logic seeking and under-



ordinated you can dump your data in hexadecimal if needed. The 160 page manual is reasonably well with examples of how to set all the printer modes. Also included are pages on the technical side of things and copies of all the national character sets. When I bought mine it was £119. Tractor feed and paper options are extra. For a while I used carriage and the no paper option. The no paper option is marvellous, it works well, will assemble copies or use folded page paper; it is quick, efficient and there is no waste. But, wanting to be like everybody else I went and bought the tractor feed. Now I have to worry about skipover and perforation codes, form length, printing at the top of the page and the waste paper re-inserter. You also need room for all the extra paper and somewhere for it to go when you are printing, otherwise it can snap.

For ease of use though I use Macintosh Consultant's Printer Control. This makes light work of all my word processing problems and allows you to take full use of all the printer's facilities. It also includes things like an adjustable speed in the key repeat software/hyper keys and a general set of keyboarders. Controlling of headings or blocks of data such as address blocks are made easy. You can change line block transfer or delete, left and right justify user defined graphics and strings, multiple prints and variable page and line spacing. There are many other facilities built in including the ability to enlarge your print up to eight times. But image mode is made easy and there are three different character sets that can be used.

Included in the package is a picture mode allowing you to read, change, modify, invert, move, or enlarge your picture, you can even add words or duplicate parts of it. The package includes a supply of preprogrammed graphics and user defined strings that are simply itself to use. This whole article including picture has come with this program.

Alan Blackwell

Look for price around £199 or less.

Centronics BUP

HELDHQ recently purchased a printer knowing the pain and frustration of looking for a good value printer especially one that can be used with the Dragon. At last my quest is over and I now own a Centronics Q10 (Keween Ultra Printer).

But let's start at the beginning. One day I woke up and thought to myself "I need a printer". Fool that I am, I thought it would be the simplest choice. How naively I flicked through the pages of the latest Dragon User. Nothing. Did this put me off? No, I looked through several old issues of Dragon User. Any luck? Not again. My printer raced at months, years, decades passed. Well, a good few issues anyway. But, alas, I found very little mention of that fascinating device. The fact I did find should have degraded my existence into complete misery.

And so I was giving up hope and thinking that these printer things were a myth, a brainwave at best. I decided to do as a last thing and look through other computer magazines. Computer User from the wealth of the editor, A. John Jackson I knew but I thought I should choose it. Mid-success I found some pointers of a margin of interest, just at the top of my planned expenditure, a few were cheap Epson compatible (yes), but still I fought on and even considered the sacrifice of buying an Acorn User (prints on the ground floor, and looks for angry mated). And then it was, love at first sight, a printer for under 100 pounds (by 30). Epson compatible (100k New Letter Quality), screen dump capable, all this and a star saying PHB8 Tractor feed + Cables + Plotter + Paper! How could I resist?

Painfully my hands trembled towards my building society book. I helped away the dust and estimates and slowly opened the light pages. Yes, through those barely legible name system characters I learned I could afford it.

Rapidly I turned back to the article, thoughts of spending money driving my

mind into a frenzy of worry and confusion. The eleven little black dots caught my eyes. All printers come standard with *jacuzzi* interface*, 'Deep' BBC*, 'Nugget' Draft*, 'Separate Inector and Precision feed', 'Tuggy' sealing head (whatever it was it sounded good), 'uses A4 sheet or continuous, original + 2 copies', '48 international characters', 'inhibit superscripts and underlining'! My mind spun. The list continued, dispelling all doubts except one: would it work with my humble Dragon? Would this much power kill my little machine?

Hours passed, tears dripped, I thought. Finally the last of a new printer slot out. I would take the risk, dive into the unknown! Next directly to the building society client passbook and did not collect 30 pounds. My head jolted. Could I forgive myself if I found I had blotted? Hands trembling went to the scales. The next few minutes devastated from my mind. I remembered nothing, the printer must have been there refilling. But when I turned to my services, seeking home, I found a strange paper of paper in my hand. After using an incorrect bystander I found this called a cheque. Not only that but by some strange coincidence it was for the exact value of the printer. £12.00 (including the post and packing). I tried to remember where this was for. It wouldn't fit in the little hole in my door where the post comes in... so I went to the classified magazine, cut out the little square in (you see, rockers with other peoples property), pasted in the details. No books worked but they said 'Ticket BBC' (RM). Hmmm, stand over I closed my eyes and thought I should choose the front. Would the postman be able to read my writing? If at all went well I would never have to write again. I stuck an 18 pence stamp on (nothing like overcharging things). I pushed in the position and there it is.

It was Wednesday morning. For days I couldn't sleep. I had found out the GPO would make your hair stand on end. Thursday passed, nothing! Friday came and arrived on the coat. Had the mail found me? Disgusted I opened it. And was given a large box stood there. He said "Sign see me". Was I signing my life away? Impulsively I signed. And he handed me the box. It was today, very heavy and it even had Vigilante on the side. No, I must be deluding myself, two days, however Superman's that has. Was it a joint? Bloody! I tore away the sticky tape. Pulled apart the brown cardboard. Intriguing, more boxes within. I took one of the boxes out for closer inspection. It contained a long piece of strong plastic with black roundels at the end. I delved further into the mystery box. Paper, inector feed paper and a roll. And still more boxes within, lots of polythene besides. More plastic, some transparent, some black, some cream. A piece of ribbonable with plugs somewhere. This was a real Aladdin's cave. Still more. Some books titled somewhat colourfully User's Manual and RX Compatibility. Some sheets with literally hundreds of buttynuggets like BBC's '2' and '1' not for quadruple density graphic mode! Had I by some

chance found a stray copy of a space-age operating manual? Again I looked into the box, carriage control passage mentioned. I pulled at it. It held it more and again I pulled. It came loose. Unfolding the combination pulling away the polythene revealed it in its full glory. A printer, my printer, by some magic it had survived before the seven days on the form. A few minutes passed as I considered the possibility of unauthorisation in the GPO. A go-list motion passed. But then I turned back to the printer. In my usual style I ignored the manual with the big letters saying 'READ THIS BEFORE YOU TOUCH A THING'. It was a belated Christmas. Quickly I clicked the plastic into the right holes. The ribbon was a doobie, the inector feed a slight buffer all too caught me out. I had followed the manual. No help. I persevered, finally located the clever original carriage and clicked the piece of metal in place. It looked socketed, but quickly my brain spotted an absence. Thereupon ploughed through my appliances. The Th? The Dragon's power supply? The socket, that's what you feed me muddering first thing in the morning? Possibly a long piece of wire with a black box on the end showed itself. My hands moved in swift gracefulness and within seconds the plug was on the printer.

My instincts told me there was just one thing to do connect it to the Dragon. The supplied lead, printer end, slid in as if it had no other purpose in life, probably because it didn't. But the other end caused a sudden panic pass from my brain to my heart. The plug was too big, no matter how hard I tried it just wouldn't squeeze into the hole in the side of the Dragon's standard PDU. It didn't in the other side, but I somehow I thought that I should fit right in! depending on how you view it. Seven pounced. I contemplated suicide and just at that moment my reddened eyes caught something. The 20 pin plug I had been using in all my coffee with. Could I sacrifice it? I took off the coffee and tried it in this hole. It fitted. But would it survive this? Could the Dragon do with 20-pin? What the body expects 24-pin? Of course, when has the Dragon ever been beaten (set up at the back there).

I removed the carriage from the printer lead. Sure enough not all pins were in use. After pleading with my 'friend' for a portion of the lead's primary port not an easy task after the state it had left his magazine in, I traced wires and connected them to what seemed like the appropriate pins on the Dragon. After a few third degree burns from a vicious scissorburner that built up a mighty accurate model of the port's architecture. All very well, but would it stand up to being plugged into the Dragon? It did! I went for the big one. I turned it on. And right gloved entry, I had to make a pretty good impression of a missile. The firehose was in the middle (without massive where altho logically). A green light appeared next to it (warning to me to Z80 keyboard buffer) remarked 'Old LIME'. The same instant my hands trembled, quickly dancing over the keyboard, the screen displayed 'F-2 - TESTHQ'. My heart fluttered as I waited for the time to press Shift-ER, I did, an eerie silence! Two long, I knew something was up. Rapidly I pressed the buttons on the printer in a

random sequence. I pulled and pushed the leads, firehose again, nothing. Why not? Why after all I've done? I looked at stepping into Dragon. Of course, it was the only thing I could try! It had plugged in in upside down! Turning it around I repeated the process and on hitting Shift-ER went mad! My ears were screaming! Looking down I saw those black buttons had appeared in a familiar tongue. 'TESTHQ' they said. I keyed in 'IT WORKS'. It replied in a tongue I could not understand. It occurred to me that this was because the paper had not moved! And both words were on the same line.

My fingers danced 'F-2 - CHRSIM', 'Stimmenumpf' and the paper had moved visibly by one line. But how could I live in a world where I had to print a chr '1' (line-feed) after every sentence? No, I wanted more control than that. I wanted carriage return to make it go Stimmenumpf. Unabusing the manual has a picture of a little box with eight assault of plastic stickings on it. They call it a DIP switch, or Dual in Line Pin. Under number seven is said 'CH (AUTO LF BREAK/EJECT). With my shaking fingers I took just a few hours to realize that this switch was responsible for the misery caused to so many people. I grabbed my pen and change it. But the foreboding voice of the manual stopped me, saying 'Never use a pen to change DIP switches'. Something to do with graphite being conductive. I decided to play it safe and use a screwdriver. Clicked it. For once in my life that little piece of plastic didn't I tried again 'F-2 - Please work, nominate printer'. It still wouldn't come on the carriage as was two other words. But at the end of the plead the patient moved so I tried again. Success! I could muddle through sentences. I was narrating to nine heights. I looked at the list of commands at control codes, tried some BBC, BASIC, extended, reduced letters. Blike, Plots, double strike, single and double density, user defined characters, international set, very letters, letters up, down, underline. Hours of fun for all the family!

So here my little tale and take a look around for pointers, even the Dragon can be coaxed into working with them. And with pointers as these, price, why I might even be able to make it pay itself if I can't win some awards for Dragon Use. Best without your struggle today optimism and those you have had more luck than I have, but I assure you it's worth it in the end!

Jonathan Bates

Look for price around £120.

Ques: *Dragon?* You buy a BBC-compatible printer mail order, it comes in two days and at you're not sure what's going on and how do the BBC's mail order? I should say you had luck?

No, the real message inside Bates' account of a full-blown printer-purchase pogroms (I have to add that I am not quite sure what happened to the printer because with the help of a little knowledge and a general deal of patience. However, anyone who is not confident of their ability to re-assemble an incompatible cable and who should stick to consulting a reliable dealer, assuming of course that the contributors did).

Manhasset Tally MT-80 Plus

I NEEDED a printer urgently as I had volunteered to produce minutes etc. for a local Society — this on top of my need to print my own listings. I could afford up to £250, so I ploughed through piles of catalogues, buyer's guides and all the advice I could get from local computer shops. I had some experience of a friend's Sharp PC-80, so had a good idea of what I was looking for. Most help was obtained from *Fast-Soft* (in Farnborough) in the shape of Sales Manager Jim, who demonstrated a couple of current models and spoke of updated versions coming shortly. One of the bulletins he gave me was for the Manhasset Tally MT-80 (B80P), which had a good specification and £2000 good as well. A few days later Jim phoned to say that his new model had arrived so I duly popped over there to find a couple of the latest printers on demonstration. One was the MT-80 Plus, happily printing away at 100 cps, in dot-matrix mode. I liked the bill for me, so did the £245 pricing, so I was able to negotiate it down to £200 including a mains plug, a couple of small 'goodies' and about 400 sheets of foolscap paper. I already had a Dragon printer lead so, back home, it took very little time to unpack the machine, fit the mains plug and connect up to my Dragon 32 — simplicity itself with the help of the Operating Manual.

The user manual is detailed and comprehensive, with all aspects of operation including a section on the interface options. It is a translation from Japanese, closely the German name, and is generally well written, although there are some real boulders here and there in help things along without damage to the main themes.

The numerous example programs are excellent and easy to adapt for the Dragon, and clear instructions are given on how to set the twelve dot-matrixes inside the machine before use, when necessary. Five of the switches cover no less than thirteen international character sets, the rest being for various basic form options including a hashed zero. There are 100 semi-graphic characters available, and graphics in the dot-image mode. In the absence of any good graphic-dump programs for the Dragon, I have only been able to try a couple of small routines from past issues of *Dragon User*, but the MT-80 Plus drew very well. It has a 8 x 8 matrix to do that, because only 7 x 8 is normal printing which is not pretty good. I will use Plus, later. Standard Super script with enlarged, condensed, emphasised etc. modes on the final line.

The MT-80 Plus is a sensible machine, and almost, but not quite, Epson compatible in that theics are obtained in a different way and the codes for the international character sets are for higher in each page. The odd reference to the manual to CP800 suggests that the MT-80 Plus is the same machine in a different case, but that should not bother anyone. Paper feed incorporates adjustable tractor and tractor which will accept standard, roll and single sheets up to ten inches wide. It is possible to print original and two copies from the available



100 ASCII and 100 JIS characters as well as the graphics.

There is a very attractive, and sturdy, smoky brown transparent cover which is slotted so that it can be *in situ* while printing. This not only reduces the noise level further, but incorporates a handy learning edge and a very useful scale, graduated every half characters from 0 to 80.

I have tried *Telewriter* which is quite good in many respects, but is complicated to set up and suffers a major drawback as far as I am concerned. It has no repeat facility, which is a pain in the neck when one needs to print around 70 copies at a time, as I have related previously. Dragon produces good results and prints each page into a single loop which then controls the number of copies required. Paul D'Arcy's *Super Print Plus* (DPU Plus 80) adapted easily to the MT-80 Plus, and simplifies access to all its facilities which, as far as I have, speeds up production. *Theresa Print*, the only problem occurred after about 1000 prints when the top row of pins in the print-head stopped printing. I took it back to the shop where Andrew has hands-on horror at what he

said was an almost unheard-of fault. However, under warranty, the print-head was replaced and I had my printer back within two days. That was eighteen months ago, and my printer has worked faultlessly, and very fast, ever since. In that time I have got to know the MT-80 Plus a great deal better and my delight with the machine continues to grow. This is the basic model with a 112 byte buffer and parallel interface, quite adequate for the average user, but other options are available for the more ambitious. The MT-80 Plus is available with either a 2K or 4K buffer, and a Serial port is optional in all versions, so there is a model to suit all requirements. The ribbon is easy to change and is in cassette form so, no ink fingers. Replacements are reasonably priced and readily available almost anywhere. Yes! I certainly like this super piece of hardware, and would recommend it to anyone, especially as it can now be obtained for less than £200 in one shop alone.

Stuart Miller

Unit price £248. Look for discounts.

Passport PZ-2120U

ATTEMPTING to save up £200 I decided to buy a printer and selected the Panasonic KX-P100U because of the wide range of facilities it offered for the price: it is an 80-column dot matrix printer with a 16 buffer and the ability to produce 80 characters on all its fonts. The two main fonts are 10 cps (pitch) and 12 cps (pitch) both of which are available in italic style. It can also work in compressed mode producing 17 cps or elongated at 8 cps. Four other printing pitches are easily available. The machine can produce graphics dumps in a variety of formats. With all this plus dot and fractionised as standard along with Epson compatible control codes, it appeared to be a bargain.

The machine was well packed and after removal from its box the job of setting up was attempted. The curious case of the

machine is of strong plastic and it has a solid metal construction and a weight of 8kg. The 104 page A4 manual gave clear instructions on how to remove the carriage knobs, install the ribbon and fit the paper reservoirs. The machine was then ready to print. The printer has a standard Centronics parallel interface and connection to the Dragon was simple. Using the table in the Dragon's manual (Figure 1) and the table in Figure 2, I made up a lead using 20-way ribbon cable, 20-way IDC plug and a 20-way Amphenol plug (Figure 3 shows the pin arrangement of the printer socket). Ready-made printer cables can be purchased for about £10.

At first the machine would print but not produce any line-heads, then I remembered that the Dragon will produce a line-feed automatically if you PZ20E 0003. This works but it's not possible to do this when using the direct command of *Telewriter* (see back

is the printer manual to find for the DIP switches. These are located before the printer head and are difficult to reach. But once I had them to my requirements I have not had to reset them a second time. DIP switch 3 makes the printer produce a letter with every carriage return. That is the only switch whose position I have changed since all the others have effects which can be achieved using software codes.

I have been using the machine now for 10 months and it has performed satisfactorily. The manual illustrates the action of all the so-called escape codes (these are instead of Print) with Basic examples, and, providing you substitute PPRINT (11 for UPRINT) for Print, the following are several switches. On the top of the printer there are several switches. The three press the light bulb on the printer On and Off line, produce a Print feed and the last a Line-feed. On the left there is a slide switch with three positions: Head, All On and Demo. The first position produces draft quality output at 8 x 11 in at 100 cpi. The second sets up the vector letter quality mode which prints on a 16 x 16 matrix at 200 cpi. The third position produces compressed print at 11 cpi.

PIN 1	Pin 10	Pin 3	Pin 10	Pin 10
PIN 2	None	None	None	None
PIN 3	None	None	None	None
PIN 4	None	None	None	None
PIN 5	None	None	None	None
PIN 6	None	None	None	None
PIN 7	None	None	None	None
PIN 8	None	None	None	None
PIN 9	None	None	None	None
PIN 10	None	None	None	None
PIN 11	None	None	None	None
PIN 12	None	None	None	None
PIN 13	None	None	None	None
PIN 14	None	None	None	None
PIN 15	None	None	None	None
PIN 16	None	None	None	None

Table 2: DIP switch table to be used.

Figure 1: Dragon printer carriage return and numbered pins are on the top row with pin 1 on the right.

PIN 1	None	Pin 10	None
PIN 2	None	Pin 10	None
PIN 3	None	Pin 10	None
PIN 4	None	Pin 10	None
PIN 5	None	Pin 10	None
PIN 6	None	Pin 10	None
PIN 7	None	Pin 10	None
PIN 8	None	Pin 10	None
PIN 9	None	Pin 10	None
PIN 10	None	Pin 10	None
PIN 11	None	Pin 10	None
PIN 12	None	Pin 10	None
PIN 13	None	Pin 10	None
PIN 14	None	Pin 10	None
PIN 15	None	Pin 10	None
PIN 16	None	Pin 10	None

Table 3: DIP switch table to be used.

Figure 2: Centronics connection for 28-way Amphenol plug.



Figure 3: 28-way Amphenol socket showing pin numbering.

This switch is a bonus and enables me to print out more rapidly. To find my many mistakes, then, when corrected, select NLQ for the perfect master without having to remember the appropriate software codes. The ribbon cassette is small and relies on the print head. It contains a thermoplastic ribbon with a claimed life of three million characters in draft mode. So far I have not had to change it and the print quality is fine. By way of comparison the multicolour ribbon in my previous machine (Siemens C 180) needed replacement every two months.

There have been no problems with the machine but there are areas in which it could be improved.

1. The font size has a scale from 0 to 60 to facilitate correct alignment of the paper, but the font is stuck and the scale is simply indicated on it. This means that it is almost impossible to read until I filled the

indentations with yellow crayon.

2. A cracked plastic cover is fitted when a consumables cover would make the print easier to read.

3. The method of switching the printer On/Off from software is not totally satisfactory. Switching back to On-line requires another software code accepted by using the switch on the machine.

An auxiliary device to indicate when a page was complete would be useful.

The printer is capable of proportional spacing, auto right justification, has 32 international characters, vertical and horizontal tabulation and the ability to store 40 of your own characters. Overall the machine has been superb and I have no hesitation in recommending it particularly now that it can be purchased for around £180.

Mike Miles

Price around £180

removing the hand clamps which hold the feed and some form packing which protects the carriage assembly. You then mount the separately packed ribbon drive, plate and the ribbon cartridge. Squares of the latter are observable from the factory, so about half the cost of the Sankyo ribbon, last about 100 lines as long and furthermore are also similar to a very widely available Japanese Daily 1000 ribbon. You then connect the carriage parallel interface cartridge to the back of the machine and into this in turn goes a standard Dragon printer cable previously obtained from one of the advertisers in Dragon User. The mains cable and switch is just above the carriage and on the front of the printer the switch can be turned up or down, line feed, and on/off line as the computer complete with an on/off indicator lamp. Three more indicate lamp show power-on, hardware error and paper end, which also sound a siren.

It is of course an 80 column machine which has a typewriter-like full-width rubber roller with hand wheel which takes single sheets of stationary which are held in place with a set of small punch holes actuated by a lever on the right. The same lever is also the open position when using standard 8 in continuous perforated feed paper which is fed by a pair of adjustable pin feed wheels, with hinged clamps each side of the paper roller, allowing about one inch of width variation.

You can individualise print of the character set by switching power on and depressing the line feed button at the same time. This was satisfactory and after loading one of my programs, the final step was to do a printout with a L1270 command. It did a very crisp clean run at 100 cpi in draft mode with the head printing in both directions, really very quiet, as the noise of the casting is partially muffled with sound absorbing sponge rubber and the machine could not be heard in the next room. There is a gentle rocking motion when the head rotates. Furthermore a blank 1 inch spacer is available each side of the paper feed perforations, leaving a nice head gap space.

This last feature as well as many others

back of the manual contain a wealth of detail about control codes, configuring the printer and using the bit image mode. But user friendly it isn't.

However the Shimax uses Epson-type control codes, so it may be possible to find a more friendly Epson manual to answer these questions which the Shimax hand-book doesn't.

At the side of the printer is an on/off switch and a small keypad in the right-hand bottom corner has three switches and four LED displays.

On power up one of the LEDs lights up, but the printer will not accept data until its 'On-Line' switch is pressed. When it is pressed two more of the lights come on, one indicating that the printer is on-line and the other that it is ready to accept data.

The fourth LED indicates when the paper is near its end.

One of the remaining two switches advances the paper to the next top of form position and the other advances the paper by one line.

Line feed is usually controlled by the

host processor program in your computer. Two sets of dip switches inside the printer can also be set to force a range of control parameters, including an automatic set feed.

But be warned, if you decide to use the dip switches take a magnifying glass. Unless you know precisely where they are, they are not easily found.

I use the printer mostly for word processing and the two word processor programs I have (Wordstar and File 80) both carry all the software instructions needed for the Shimax CP480.

Finally, to better service the printer ribbon, it comes in a cartridge which is easily fitted. The cartridges cost around five pounds each and in three years and probably around 70,000 words, I have used seven.

The Shimax CP480 has since been superseded by the Shimax CP500 which is basically the same machine, but with a 1200cps rate.

Word-processor

Unit price £199.

Shimax CP480

MY Shimax CP480 was obtained from S P Electronics in Hucknall, Nottinghamshire and cost £255 including VAT and postage and packing. As I recently called it 'my CP480' and tried to put first — they are very helpful, especially when, after buying and not sending away trying to get it to work, they pointed out that I hadn't removed a small piece of packing material (see below). That is yet S P Electronics regularly in DU.

Unpacking the printer reveals a smart box finished in black/silver measuring 340(H) x 310(D) x 190(W)mm and weighing about 8kg. Two slotted screws must be removed from the base of the unit before use, as well as a small piece of packing foam which is stuck between the printer head and the front-hand side plate carriage.

The printer is supplied with only one of the two available interfaces, serial or parallel. These are plug-in units and may be easily interchanged. The serial interface is a standard RS232C interface operating via a 20mA current loop at up to 1800 baud. The more common parallel interface is a standard Centronics type (the type the Dragon needs), which is an amphenol connector. Also included on the

interface board is a switch which can be used to inter-change carriage return or carriage return/line feed. The operating systems (MS-DOS and CP/M) automatically feed characters as they automatically pass them to the printer, but the Dragon's PICA print routine does require it. This switch is not designed for halftones as it is envisaged that either of these operating systems will be used frequently, it is probably wise to fit an external switch in parallel.

The manual supplied consists of 80 pages of A5 text, diagrams and examples, and is very comprehensive, although, grammatically speaking, it does suffer somewhat from being translated from Japanese to American English.

On its top panel, the CP480 has three selector switches on-line, line feed and type feed. There are also four indicator lamps: power, paper out, ready and on-line. Under a small dipswitch panel lies a bank of 10 dip switches whose status are determined by the printer at switch-on. These may be used to set the initial power-on conditions of the printer, although almost all of the features may be changed at will by software. Functions controlled are: whether or not to download an alternative character set, whether to use normal or emphasised text, the default form length,

(17 or 12 inches), the default line spacing (10 or 12 lines), the default column length (80 or 120 characters), whether margins include a ten skip over the perforations in continuous form paper, and whether to print the zero character with a slash through it or not. The position of the remaining four switches sets the default character set. Altering the position of any of these switches after power-on will have no effect.

The CP480 has two self-test routines, holding down the line feed button while the printer is turned on causes the entire character set to be printed out. Holding down the form feed button whilst power is applied results in a continuous printing of part of the character set until FF is received.

Character sets available are: ASCII, Roman, French, German, Danish, Swedish, Italian and Spanish, all with Japanese characters. Also available are: ASCII (matrix 1 x 80x80), ASCII (normal 1 x 80) and ASCII + Greek. The CP480 will even print Japanese Kanji characters.

Several printing formats possible: PICA 100 characters/inch and EMALAROID 140 characters/inch. Additionally, these fonts may be mixed to give mixed width characters, eg condensed and enlarged. Text may also be made into emphasised mode, which produces a stronger impression on the paper. Double strike mode causes the print head to move two passes, advancing the paper by 1/16 inch in between. This gives excellent 'near letter quality' text, even with an ageing ribbon. With a new ribbon, however, this facility is not emphasised as the print head is square and butts up to each other leaving no unsightly gaps. Most of these features and fonts may be mixed giving a total of 64 different print modes (in any character set). Subscript and superscript are selected for in any font you wish, another printer also supports proportionally spaced text, which removes large gaps between narrow characters such as the letter 'I'. The print head has nine pins, giving ten letter case discrimination (letters such as 'I', this feature also enables underlining. Some examples of different fonts and features are shown in Figure 1. The carriage may also be rotated round, enabling non-rectangular graphs to be printed. An impressive example of this is given in the manual.

A total of four carriage modes are available: 1000 mode with either 640 or 1280 dots/cm (selected single and double density), and the same using 9 pins. Thus any two-colour screens may be dumped quickly and easily.

Software controllable functions include: selected paper and carriage, print head backspacing, moving to next line, advancing paper to next logical top of form, selected paper cut-off line, empty paper buffer, print vertical and horizontal tabs, unidirectional/bidirectional printing, reset to power on state, set line spacing, set form length, set margins etc.

The CP480 is not yet quiet in use, in common with other dot-matrix printers. Micro Peripherals claim a printing speed of 100 characters per second, but I would

1000 text, 10 x 1000 dots, 1000 characters.
New's about seven characters at present so it's not bad.
1000 line spacing, margin 1000 dots, 1000 characters, 1000 lines.
This is now same width as double width 800 text.
Margin is now 1000 dots (1000 characters).
It's now a total of 1000 characters as well (1000 lines).
Print head can now be positioned at any position, and especially at corners.
Here's a line now present to revert to the user font in the user.



180 characters per second, but I would estimate it to be nearer 180. This printer will accept either single sheet or tractor feed continuous form stationary. When the paper is depleted, a warning buzzer sounds for 3 seconds, printing stops. The printer goes off-line to estimate the number of lines and the paper cut light comes on. After re-loading the paper, printing may resume by taking the printer online again.

Inside the unit are two boards, marked "RAM1" and "RAM2". These may be fitted with 256K static RAM chips to provide a 256 x 16K buffer. At under two pounds each, these are a worthwhile investment, and are a necessity if you plan to download an alternative character set or if you can devise one of the screen cloning techniques.

The model used is a nylon backed mylar-like curtain, cartridge type. They cost about \$15 and are easily obtained, since the Commodore MEGA 800 uses them. They also last a long time. I have had my printer for over one and a half years and I'm on my second ribbon! In this time I have experienced no problems at all, excepting the standard Dragon machine, Plus, C64, or even a BBC (please repeat), I could even dare to say that the C6400 is built even better than an 800.

In summary, this is my best and most reliable prognosis. I wonder how I might manage without it.

卷之三

Look for prices around \$1000 or less.

Family Care Pediatric Dentist

The E-Tandy Corporation sells a variety of computer equipment and one of their computers is very similar to the Dragon, some of this equipment is of interest to Dragon owners. I bought from Tandy a CGP-110 Plotter some 10 months ago and I have been very pleased with it.

At the time I was hoping to buy a ten-point, but the only ones available in my town were cheap and mostly or were much too expensive for both reasons.

Although the CGP 730 is primarily a printer, it can print text quite nicely and in reasonable priced. I had someone do a trial by my local computer manager told me that Tamag offers a 30-day trial of its computer equipment. So I took it home to see it in use. I was quite pleased with the end of the period, I decided that it would be a wise investment.

The last price is now £799.95, but most of the time the machine is on offer at £499.95 and this is what I paid. However, I also had to buy a ribbon suitable of F1880/1 (I connected it to the parallel port of my Dragon 34). Although I haven't tried it, it ought to be possible to connect it to the serial port so the printer can work with one. The printer comes with the baseline drivers of my Dragon, and with that normal PPI811.BIN of PLRS. There were no installation problems. Four QIP switches have to be set, but this is explained clearly in the manual. There has never been any need for maintenance. I'll had to buy a printer tomorrow. I would either buy the same again, or else adopt a quite different approach, namely today the F18's connection goes from *CompuStation* to

PROBLEMS

FOCUS GRAPHIC DESIGNER

Figure F



```

10 REM-----XXXXXXXXXXXXXX
20 REM-----DP-115 DEMO BY PARSONS
30 REM-----XXXXXXXXXXXXXX
40 TINT4=CHR(170):TINT5=(HGT(18))
50 R = 180 : RADIUS
55 PRINT#1=2,CHR(147):PRINT#1=2,"SA" PRINT#1=2
,"DP"! : PAPER105/SET SIZE/COLOUR
60 PRINT#1=2,CHR(153)!:CARRIER RETURN
70 PRINT#1=2,"LB" PRINT#1=2,"TB,-30"! :BLANK
8 HOME
90 PR#1=2,"JP DP-115 DEMO":PRINT#1=2,""
"1"
95 PR#1=2,"TB,-78"
98 PRINT#1=2,TINT4!#TEXT MODE
100 PRINT#1=2,CHR(181)!# COLOUR :CHARCODE
111 : GRAPHIC :CHR(129): "PRINTER"!# TEXT
IN 3 COLOURS
115 PRINT#1=2,CHR(181)!#LINE FEED
120 END ASAP!# CIRCLE#A
125 PRINT#1=2,"-----CIRCLE-----"
150 FOR J = 1 TO 750:NEXT#DELAY
160 PRINT#1=2,CHR(147):TB,-110,240,-110#
165 PRINT#1=2,"1"
170 PI = 3.1415 : FZ = 28PI
180 BY = "TB"
190 FOR K = 0 TO 360 STEP2
200 S = 18/360*PI*FZ
210 R = INT(COS(HS*PI)): T = INT(COS(LS*PI))
220 PRINT#1=2,BY,0,FZ,"ST180="D"
230 NEXT
240 PR#1=2,"TB,-200,-340" PRINT#1=2,"I"
245 PR#1=2,TINT5

```

that I could do my printing in the office where I have access to high quality

Now it is time to put my views into perspective. In this world, you have to be very lucky to get value for money. It is unacceptably expensive and poorly made machine tools in the same class as a machine

costing several times more. So what's the cost? Each of the two opinions say 1. The principal counts to nothing.

(a) That-CCP# will print on paper from a 4.5 inch wide roll — too bad if you must have A4. They had to say it, either 400 characters per line or a resequencing of characters between lines, or 80 characters of a sequencing of them.

(b) It writes, either than points with miniature ball point pens. The pens move from side to side and the paper jiggles up and down. The result is that the printing speed is a mere 10 cps which is much slower than a dot matrix printer.

(c) Thermacheck looks like a little library. I would not recommend it to anyone who is a dot-matrix-printer or anyone who has little or great deal of printing.

The reader has to judge for himself whether these three points are important.

The 16-character line width is very appropriate to the Dragon's 1600 16-character screenwriter. I speculate that it is appropriate for submission to journals, because editors always ask for wide margins. 16 characters down the middle of the page (by careful photocopying) may be quite suitable. (Printers of this type can give pictures of the text, descriptions etc. in place of the text itself because the result is a facsimile which is often topologically or point-type. This is especially a problem with diagrams, but if the printer is maintained and setup properly the problem does not arise — (d) A feature to beat in my thoughts is that the printed line is very fine but has a printer with a claimed resolution of 8 dots/in, too fine for normal printing purposes. Of the four colours, blue gives the most legible print and red gives the best contrast for photocopying.

Deciding the machine is really a printer it has capabilities that are not usually found on printers. I have not tried them in anger but, for the purposes of this review, I have tried all the features and I have a small demonstration program based on a longer one in the manual.

Other features to note are:

(a) In the graphics mode, one can control the print size from 80x4.5ds to 1 page 4ds.

(b) Printing can be from left to right or top to bottom or vice versa if required (eg for the axes of graphs).

(c) Underlining and superscripts can be printed.

(d) There are commands to take a line or move the print head relative to a fixed start point, or relative to its present position. The 'line-type' can be either full or four degrees of dotted. The colour can be changed by the program. A 'dollar' sign command draws the axes for graphs, marking the chosen intervals automatically.

The manual is well written. There are some typing and spelling mistakes but for the most part it is a good manual. I have had difficulty with the keyboard and the printer is not connected with the Dragon. I mention it only to stress a potential Dragon source from wasting time. It is easy from 'text' to 'graphics' mode, it is necessary to have a power switch in the program immediately before the change. The program in the manual does not give a long enough pause.

In summary, the DGP-110 is a good value for money at the sale price of £129.95 and merits consideration by anyone who has a modest need for a printer and who is prepared to accept its relative slowness and narrow paper width.

J. B. Dwyer

Look for the price £129.95, offer price £99.95.

Tandy DMP 100

PERFORMANCE Many months of searching for a printer to enhance my Dragon. I visited Tandy in Plymouth to look at the printers they had on sale.

I explained to the sales staff what I wanted and they showed me to their computer department. The many printers on display were all connected up to computers and the sales staff listened to what I wanted, which was "A printer to print out programs and make readable, read diagrams etc".

The sales staff showed me the performance of about ten printers. The printer that I chose was the Tandy DMP 100. The printer is small, medium speed and very competitively priced at £130. (Since I bought mine the price has been reduced to £119.95).

The DMP 100 has a 16 character per inch print speed of 60 characters per second. Edge-on-line print, normal, condensed, and compressed characters, graphical character mode.

The DMP 100 operates in two modes: character printing for output of program listings, report writing, or the creation of any text documentation, and a graphics mode for drawing pictures, figures or graphs.

In the character mode the printer prints monospaced font or mixed characters. In the graphics mode you can use graphics characters to produce any type of graphics configuration you desire.

The printer can use two types of paper, single sheet of any width from 4in to 9.5in, and computer landed form with edge guide holes. The printer is capable of producing one leg copy plus one carbon-copy.

The printer is connected to the Dragon via a ribbon cable from the printer to port, and has its own power supply, included in the price is the tractor feeder and a small cover that fits on the printer when the feeder is not being used. A paper separator is used with fanfold paper to prevent the folded paper from becoming a tangled mess at the rear of the printer.

Connecting the DMP 100 to the Dragon is simplicity itself. Once plugged into the main and the ribbon cable inserted, the paper is loaded, the power switch turned on and the printer is ready to be used.

On powering up the printer the print head moves from one side of the carriage to the other and then back again. During this time the ON-LINE/OFF-LINE button is pressed the printer goes into self-test mode and prints out the full DMP 100 set of all 16 characters available.

The printer has two print function switches (PFS). These are set for parallel serial connection. Their function is well explained in the manual.

The manual is a very well produced 16 page volume in A4 format. It is extremely well written and easy to understand, made by the computer literate (such as me).

Prints modes which are software controlled are: executive line feed, carriage return, start underline, stop underline, select graphics, start elongation, and elongation, position print head, select

standard character, select overlength character, set carriage return, set carriage return and line feed, percent wide, set half formatted line feed, start bold, and bold, set full forward line feed, select bi-directional printing, select uni-directional printing, set no/10 forward line feed, set no/10 in forward line feed, repeat print data.

The DMP 100 is designed for two distinct applications, character printing and graphic printing.

The printer responds to software codes from the computer in two different ways — one for each application. The two response patterns, or modes, have many similarities but each has its own unique features.

The character printing mode is used for printing documents. In this mode, line feed commands do not cause immediate printing. Instead, they are stored in the printer's memory along with other data. When the current line is printed, the line feed command is stored in the memory determines the pitch of the paper feed.

Before discussing the various print modes available on the DMP 100 it may be worth explaining how the computer interacts with the printer.

All information is passed to the printer as ASCII code. The full list of codes can be found in computer books. Most numbers are printed as letters symbolic numbers. However, the numbers 0-31 as well as some sequences of numbers are used to control the printer functions. These are known as control codes, sometimes referred to as escape codes. These codes allow you among other things to change the font, setting, underline, overrule special line feed control.

Graphics mode is very different, as you have complete control over the matrix of dots and also the position of the print head. The pattern of the matrix is passed to the printer as numerical data numbers from 020 to 250. This allows the printing out of high-res graphics such as charts, letter heads etc.

The DMP 100 is a dot-addressable printer. Therefore, (as the manual tells us) line length is not determined by the number of characters, but by the number of dots per line. By counting the dot columns, a combination of different dot styles, including standard and elongated, can be printed on each line. The number of dots-per-line in the Character Printing mode is 1600, Compressed 1152 and Condensed 1000.

If the length of text the printer receives exceeds the limit of dots per line, a linefeed is automatically inserted and the last character is printed from the start of the next line (this is known as wrap-around).

I don't use the serial interface very often, but for those who would like to know about it I am including it for their benefit.

Transparency rate is selected by the two dip switches. The general specification of the serial interface is:

Standard: max 160-200 serial baud rate 600 or 2400 BPS serial, parity: none/parity, buffer: up to 128 characters, data bit: 8 start bit: 1 space bit: stop bit: 1 or 2 mark bits, signal cable: 16 wires max.

Interface connector type: 4-pin DIN socket
model: TCS-4848-01a or equivalent
manufacturer: Hirose Co. Ltd.

In summary then I feel the **Siemens DMP-105** is extremely good value for money. The quality of the printed work is very pleasing and could put many printers in a difficult position. The price is right. The combination of the unique features, layout and

police the location of the site.

The DMP905 is manufactured for Taito in Japan. The catalogue number is 20-0171. It is worth noting that the ribbon cable is not supplied with the printer. (This is something I don't understand, it is like buying a bicycle without a chain. I wonder how it's too much.) I reassembled it using anything from £20.00 to £10.00, as my advice is to shop around. That's all for the printer.

I have no reservation in recommending this printed to everyone and in fact following visits to my home three of my work colleagues have bought the *Distress*. I hope that this article is of some help to those who have go from shop to shop and badge that sales staff into exaggerating the problems on sale. Ian Martin

—**ПРИЧЕМЪ ТИХОВЪНЪ ИМЕЕ**

THIS SECTION ILLUSTRATES WHAT THE ERP 100 CAN DO WITH A LITTLE HELP FROM EXTERNAL SOFTWARE.

THE SOUTHERN SCHOOLS FOR CHILDREN OVER THE AGE OF THREE.

THE CHIEF OF STAFF FOR THE ARMY AND THE 101ST AIRBORNE DIVISION

◎ 译者：陈明仁 梁家伦 陈晓民 胡晓

FOR THE CHIEF JUSTICE FOR JUDGED OVER THE LAST POSITION

```

THE LISTED PROGRAM SHOWS HOW ESCAPE CODES MAY BE USED
10 PRINT#2,CHR(27)CHR(14)!"      JUMPING THROUGH HOLES"
20 PRINT#2,CHR(13)
30 PRINT#2,CHR(14)CHR(15)!"      THIS SECTION ILLUSTRATES WHAT THE O/P
40 CAN DO WITH A LITTLE HELP      FROM PROGRAM SOFTWARE"
50 PRINT#2,CHR(13)
55 FOR I=
60 AS="THE UNION BRIDGE HAS JUMPED OVER THE LAST DUGG"
70 RS="NORMAL" - "4000"CHR(255)D1 - "1000"CHR(255)D2 - "
80 PRINT#2,BB40004000
90 PRINT#2,CHR(13)
100 PRINT#2,CHR(27)CHR(202)CHR(200)
110 PRINT#2,CHR(13)
120 PRINT#2,CHR(27)CHR(200) BB4000CHR(200)
130 PRINT#2,CHR(27)CHR(179)
140 PRINT#2,CHR(13)
150 PRINT#2,CHR(27)CHR(201)CHR(201)BB70      " 400
151 PRINT#2,CHR(27)CHR(201)CHR(201)CHR(202)

```

Expert's Arcade Arena

GOOD AFTERNOON, or morning, or whatever time it is that you're reading this. If you could all raise your glasses please, the toast is Joe Blosfeld who has managed to map out the state of Total Eclipse Universe One. The task of finishing universe one is certainly arduous, the task of mapping Universe One is even more arduous, and the task of presenting it neatly and clearly is pure Joe Blosfeld. You've printed as large as we can, but you may have to use your imagination with some of the names — Ed. (Good luck with Universe One.)

Now then, a lesson for you all about the way to address me within your correspondence. The example for you comes from M. Hall. He starts "Your Highness" — This is a good start — "I am having some problems understanding how to use some of the POKEs you have most graciously supplied in your noble column. I have had complete success with the Men of Shock波音, but later they always a mystery to me. What use is the RESET Poke, when you know a LURE's address what should be POKE#4? Can you furnish me with details on how to use them effectively?"

"I offer Friendship thanks for your valuable lesson and thank that this column is the best thing since the Pan-Galactic Gargle Blaster."

Now then, this is how to write a letter. Well done, M., by the way, who takes the rest of your first name? The answers to your questions are that a RESET Poke stops the machine from cold starting when you push

the button on the side of the machine. The LURE's address should be poking with the number within red brackets, which, in our specified, are 0.2765.

Now then, to come back to Joe's map printed in on the centre pages, the following points should be kept in mind when using it:

- 1) The map shows version 1.3. Other versions may be different.
- 2) There is no reprogramme down from galaxy 9 to 8, so collect as many credits as possible before going over to galaxy 8.
- 3) If you pass through the Black Hole in galaxy 11 you must have obtained a shard, otherwise you will disintegrate.

Now then, to Shazzin Blaster. And also to a name that has been never before seen in this column. Yes, this is a name: "P-FR-E-M"! "P-FR-E" comes on screen B. A Credits (there's another one who's had his first name passed), maybe there's a name here for the great detective (Sherlock Expert), who provides a way to beat the computer opponent every time on "Shadow Master Plus". It runs thus...

BOUTS 1-8.2: As soon as you have been given the instruction tonight put the joystick in the top left position to do a forward somersault to meet the computer opponent in the middle of the screen. Keeping the joystick where it is, press the fire button. Your man should now do a high back kick to kill your computer opponent. You should get 100 points for this every time

you kill it in bout one and 800 in bout two.

BOUT 3: On the next fight put the joystick in the top left position. During the supposed forward somersault put the joystick in the middle right position. Your opponent should then back somersault to level in front of you. When he lands press the fire button, this should give you 400 points.

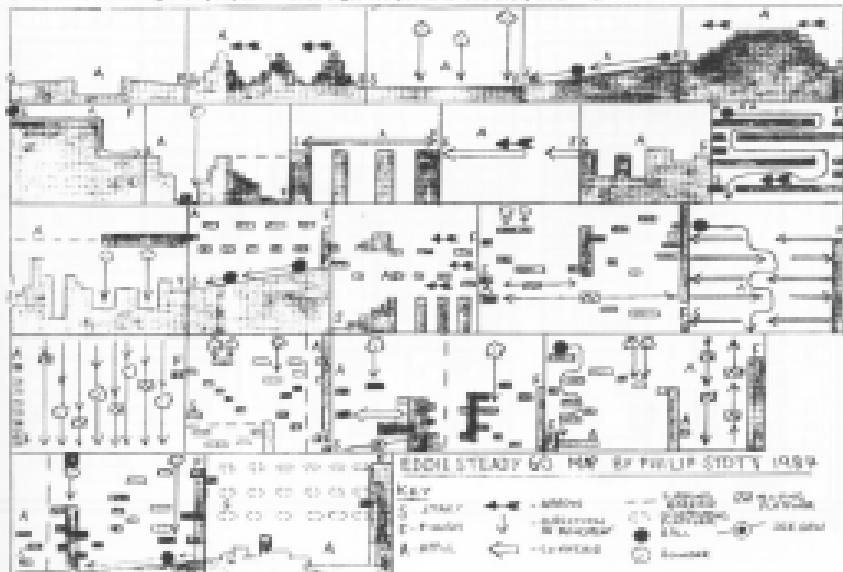
BOUT 4: Put the joystick in the bottom left position and hold. When the computer opponent somersaults toward you put the joystick into top right position. Everyone the computer opponent lands, press the fire button (this one will take a lot of time and practice to perfect).

BOUT 5: Repeat method for bout 3, but put the joystick in the top position and hold down the fire button. This should drop kick the opponent for 1000 points.

Right, that's that, now then, how about some more game solutions from you? By the way, what do you think of Philip Scott's Eddie Brady 'O' Mac, pretty good?

Here's a nice little routine from Paul Berger for Incubus's Moon Create. Load it using S4007: POKE 4286: POKE 1270: EEXC 48044: 204, 1, 2, 142, 98, 488, 207, 129, 224, 20, 8. Finally start the program with EEXC 8016. This should make your small ship invulnerable.

That's it for this month but next month sees the publication of edited highlights of Paul Berger's Hacking sheets, for which I send him my thanks and, yes, my admiration, and if that isn't a world first nothing is.



Category	Definition	Example	Notes
Geometric	Shapes and patterns based on geometry.	Pyramids, spheres, cubes.	Includes: Sphere, Cube, Pyramid, Cone, Prism, Cylinder.
Organic	Shapes and patterns based on organic forms.	Leaves, shells, flowers.	Includes: Leaf, Shell, Flower, Plant, Animal.
Abstract	Shapes and patterns that are not based on any specific object.	Fractals, spirals, dots.	Includes: Fractal, Spiral, Dot, Line, Circle, Square.
Fractal	Shapes that are self-similar and have a complex, repeating pattern.	Snowflakes, clouds.	Includes: Snowflake, Cloud, Fractal.

4 JOURNAL OF POLITICAL IDEAS

ROGUE ECLIPSE UNIVERSE

36

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An Epson, not an Epson

B. Newman Walker on printer codes, with a program to print out Star DP510 type styles

THE trouble with this article is that it falls between two stools. It was prompted at the first place by the more helpful than cleverly-titled article in the February 1987 Dragon User. She made three major points: (1) Epson control codes have long been the standard for the dot-matrix printer industry; (2) The control codes involving several OEM/ESC statements for each, are extremely tedious to use, particularly when several different codes have to be sent before printing can commence, or to alter something during printing. She offered a neat method of converting codes to string variables, resulting in considerable simplification in the control of the printer; (3) Fed in with the latter she offered a program for printing cascading labels which would greatly ease the labour involved.

Taking these three points in turn: (1) Unfortunately she did not mention which model Epson she was using, and the control which I am aware has codes which are noticeably different from the codes she gives. (2) There must be at least two Epson standards. Now if so happens that I don't have an Epson, but I do have a manual for the Epson ME20 (Model 910) Type III, which shows in particular that there are no ESC, '^L' codes, and so from D'Arcy's program could not work as it stands with one of these machines. (3) Her point about the tedious nature of the ESC codes touched a sensitive nerve, as they are 250 tedious that I had never investigated more than a few on my Star DP510. So here lies the opportunity to do something about it. (2) Thought labelling was not of immediate interest, I had long had the need for a program that would print comparable examples of the same five styles in ALL the type styles available, to assist in deciding which particular style is best suited to, say, the headline on a form or the title for an article. The program would have to be structured somewhat differently from Paul D'Arcy's label printer.

I came to own the Epson manual in interesting circumstances. The manual that came with my Star DP510 Printer automatically gives the codes only in their ESC form as ESCW (for enlarged model), but no indication of how to achieve them, and for several weeks I was virtually stuck. During a conversation with a friend, who has not got a Dragon but who has got an Epson printer, he kindly produced the Epson manual which showed exactly how the codes are put in. Most of the codes (not all) were identical to those of my Star, and in the manual was heading to tell us how the printing had gradually agreed to buy a new one and did me the deal.

I learned from this Epson manual, for example, that the above code was typed in as `CHRS(240)CHRS(181)CHRS(1)`. Note that the first two sets of brackets concern the ASCII equivalent of ESC and W

PRINTER CONTROL CODES

Figure 1

FOR STAR MODEL DP510
Other Epson Models ME20, TypeIII & MX800/TypeIII are
Presumably

ESC VERSION

DECIMAL VERSION

PRINT PRINTER CODES

ESC P 1	Normal	TP1000 NO underline	27 80 1
ESC P 2	^L1100	TP1000 underline	27 80 2
ESC P 3	^L1200	TP1000 underline	27 80 3
ESC M 1	Enlarged On	27 87 1	
ESC M 0	^M	27 87 0	
ESC A	Stylus On	27 82	
ESC B	^A	27 82	
ESC C 1	Underline On	27 45 1	
ESC C 0	^C	27 45 0	
ESC D 0	Subscript Off	27 83 0	
ESC D 1	Subscript On	27 83 1	
ESC T	Superscript Off	27 84 0	
ESC U	Superscript On	27 84 1	
ESC R	Initialise Printer	27 84	

PRINT HOLD/TYPE CODES

ESC S	Emphasis On	27 87
ESC F	^F	27 80
ESC G	Double Strike On	27 81
ESC H	^H	27 82
ESC V 1	Zero with slash	27 86 1
ESC V 0	Zero without slash	27 86 0

EXTERNAL CODES, CHARACTER SETS

ESC R 0	U.S. A.	27 83 0
ESC R 1	French	27 83 1
ESC R 2	German	27 83 2
ESC R 3	UK	27 83 3
ESC R 4	Danish	27 83 4
ESC R 5	Swed.	27 83 5
ESC R 6	Italian	27 83 6
ESC R 7	Spanish	27 83 7
ESC R 8	Japanese	27 83 8

PAGE HOLD/TYPE CODES

ESC C	Line Break Linefeed	27 80
ESC D	^D	27 80
ESC E	^E	27 80
ESC F 1	^F1	27 80
ESC F 0	^F0	27 80
ESC G 1	^G1	27 80
ESC G 0	^G0	27 80
ESC H 1	^H1	27 80
ESC H 0	^H0	27 80
ESC I 1	^I1	27 80
ESC I 0	^I0	27 80
ESC J 1	^J1	27 80
ESC J 0	^J0	27 80
ESC K 1	^K1	27 80
ESC K 0	^K0	27 80
ESC L 1	^L1	27 80
ESC L 0	^L0	27 80
ESC M 1	^M1	27 80
ESC M 0	^M0	27 80
ESC N 1	^N1	27 80
ESC N 0	^N0	27 80
ESC O 1	^O1	27 80
ESC O 0	^O0	27 80
ESC P 1	^P1	27 80
ESC P 0	^P0	27 80
ESC Q 1	^Q1	27 80
ESC Q 0	^Q0	27 80
ESC R 1	^R1	27 80
ESC R 0	^R0	27 80
ESC S 1	^S1	27 80
ESC S 0	^S0	27 80
ESC T 1	^T1	27 80
ESC T 0	^T0	27 80
ESC U 1	^U1	27 80
ESC U 0	^U0	27 80
ESC V 1	^V1	27 80
ESC V 0	^V0	27 80
ESC W 1	^W1	27 80
ESC W 0	^W0	27 80
ESC X 1	^X1	27 80
ESC X 0	^X0	27 80
ESC Y 1	^Y1	27 80
ESC Y 0	^Y0	27 80
ESC Z 1	^Z1	27 80
ESC Z 0	^Z0	27 80

respectively (but the third bracketed contains the ACTUAL, number 1 and NOT its ASCII Equivalent). An alternative form is to replace the middle term (CHR\$(50)) with "W", but this cannot be done with the first and third terms.

You will notice that this in the Listing has been replaced by "W". This is because of the use of string variables, which will only accept a +. I forgot this until after I had typed in the whole program, and on trying PMSI got the complaint on ERROR#1, so had to re-enter the change in + for everyone.

Mystical section to PMSI ASCII translate was merely to produce a corrected chart and program showing the codes for the Star DP810 and modifications to the Epson Model 800. But as I progressed, the need to examine all the type styles available became more urgent, and developed a new program to achieve it.

Figure 1 gives all the codes for the STAR DP810 taken from the manual and arranged in an order most suited for my purposes. A further section where those of the Epson differ.

Figure 2 is a list of the Test Print options (TP#) required for my program. It has been kept separate from the Listing to avoid clutter (and to save memory). As far as possible I have used the same symbols for the string variables as Pam D'Arcy's for interchangeability, but the use of two dimensions. This list is incomplete since I am not currently interested in general printing and for brevity I have omitted all the line feed codes etc. but of course it can easily be expanded by anyone having the need.

In the Listing, the Basic Program is contained in lines up to 240, lines 1000-1010 set up the Test Print options available, and lines 1600-1620 contain the PMSI NEXT key that prints the options.

The words to be printed are edited in between the quotes at line 1010 in place of YOUR printing TEST. The string variable TPL# at the end of this line resets the printer back to the original default mode after each printed line. This is very economical, since it saves having to use CANCEL or RETURN in many loops.

Line 20 dimensions TP# to the number 80 used. If you increase or decrease the number of options then D# should be adjusted accordingly, since the PMSI only accepts 10 in default. Pam D'Arcy maintains a "proportional" facility, but this does not appear to be available in either the Star or Epson models under discussion.

So, if you have either of the types of Epson printers (manufactured by Matsushita Electronics Co. Ltd) or the older DP810, you could adapt any of them to either of these two programs with a little judicious (SOFTWARE) massaging (such as Jerry Madeline Editor) (for example add a headline after #10) of a few codes.

Those of you who, like me, have purchased small amounts of software from Pam D'Arcy at Parameters Ltd., will know from experience how fair and helpful she is. If you haven't then you will just have to take my word for it.

By the way, if you use a Star DP810, the codes are NOT all the same ...

Figure 1 (continued)

MISCELLANEOUS

ESC W 1	Print Unidirectional On	27 80 1
ESC W 0	" " Off	27 80 0
ESC Y 0	BLK (Upper) DH	27 80 0
ESC Y 1	" " " Reverse	27 80 1
ESC Z	BLK DH, " " "	27 80 0
ESC E	BLK DH, " " "	27 80 0
ESC E 11, n2	" " Reverse DH, " " "	27 80 0
ESC E 12, n2	Code Break by Single quote	27 80 0

MISCELLANEOUS NON-ESC OPCODES

BLK	Blank Table, 8x40 lines, same ESC	0
CR	Clear Page Return (ENTER#10)	10
LF	Line Feed	10
VT	Vert. Tab	11
FF	Form Feed	12
HT	Horizontal Tab	13
GD	Shift Out (enlarged Type)	14
GD 4	" " " Normal	15
SI	Shift In (Condensed Type)	16
GD 2	" " " Condensed	17
DL	Delete	127
BS	Back Space	8
DL1	Dev1 (Puffer)	7
DC1	Printon on Line	17
DC2	" " off Line	18
170C	" " Device Control"	19

FOOTNOTE

Codes for EPSON Printers Models M80P, Type810 and M80P/7 Pys 101 appear to be similar to the above with the following exceptions -

LIST OF TEST-PRINT OPTIONS

TP#(1)	= Normal (Physical)	Figure 2
TP#(2)	= Elite	
TP#(3)	= Condensed	
TP#(4)	= Enlarged	
TP#(5)	= Normal, Italic	
TP#(6)	" " ,Emphasized	
TP#(7)	" " ,Double Strike	
TP#(8)	" " ,Emphasized,Double Strike	
TP#(9)	= Elite,Emphasized	
TP#(10)	" " ,Double Strike	
TP#(11)	" " ,Emphasized,Double Strike	
TP#(12)	" " ,Italics	
TP#(13)	= Condensed,Emphasized	
TP#(14)	" " ,Double Strike	
TP#(15)	" " ,Emphasized,Double Strike	
TP#(16)	" " , Italics	
TP#(17)	= Enlarged (Normal),Emphasized	
TP#(18)	" " " ,Double Strike	
TP#(19)	" " " ,Emphasized,Double Strike	
TP#(20)	" " " ,Italics	
TP#(21)	= Elite,Enlarged	
TP#(22)	" " " ,Emphasized	
TP#(23)	" " " ,Double Strike	

TPB(240)	=	"	"	,Emphasised,Double Strike
TPB(251)	=	"	"	,Italics
TPB(260)	=	Condensed,Enlarged		
TPB(271)	=	"	"	,Emphasised
TPB(281)	=	"	"	,Double Strike
TPB(291)	=	"	"	,Emphasised,Double Strike
TPB(301)	=	"	"	,Italics
TPB(311)	=	Normal,Italics,Emphasised		
TPB(321)	=	"	"	,Double Strike
TPB(331)	=	"	"	,Emphasised,Double Strike
TPB(341)	=	Elite,Italics,Emphasised		
TPB(351)	=	"	"	,Double Strike
TPB(361)	=	"	"	,Emphasised,Double Strike
TPB(371)	=	Condensed,Italics,Emphasised		
TPB(381)	=	"	"	,Double Strike
TPB(391)	=	"	"	,Emphasised,Double Strike
TPB(401)	=	Enlarged,Italics,Emphasised		
TPB(411)	=	"	"	,Double Strike
TPB(421)	=	"	"	,Emphasised,Double Strike
TPB(431)	=	Elite,Enlarged,Italics,Emphasised		
TPB(441)	=	"	"	,Double Strike
TPB(451)	=	"	"	,Emphasised,Double Strike
TPB(461)	=	Condensed,Enlarged,Italics,Emphasised		
TPB(471)	=	"	"	,Double Strike
TPB(481)	=	"	"	,Emphasised,Double Strike
TPB(491)	=	Superscript		
TPB(501)	=	Subscript		

```

5 *listing
10 *Basic Program for STAR DOT-MATRIX PRINTER
15 *B. YODMAN WALKER 1987
20 *WITH ACKNOWLEDGMENTS IN PART TO PAUL STARDY
25 POLARIS
30 CLEARPAGE
35 DIM TPB(501)
40 *THREE VALUES
50 AAB=CHR(01)
60 ADB=CHR(10)
70 AEC=CHR(27) 'ESCape Character
80 NM=CHR(0)+"P"+AAB "Normal Italic"
90 LN=CHR(0)+"P"+CHR(2) "Elite
100 CH=CHR(0)+"P"+CHR(3) "Condensed
110 EN=CHR(0)+"P"+AAB "Enlarged On
120 EN=CHR(0)+"P"+AAB "Enlarged Off
130 IT=CHR(0)+"P" "Italic On
140 IT=CHR(0)+"P" "Italic Off
150 SPT=CHR(0)+"P"+AAB "Superscript On
160 SPT=CHR(0)+"P"+AAB "Subscript On
170 X2B=CHR(0)+"P" "Super/Subscript On
180 UU=CHR(0)+"P"+AAB "Underline On
190 UD=CHR(0)+"P"+AAB "Underline Off
200 ED=CHR(0)+"P" "Emphasised On
210 ED=CHR(0)+"P" "Emphasised Off
220 DS=CHR(0)+"P" "Double Strike On
230 DS=CHR(0)+"P" "Double Strike Off
240 IP=CHR(0)+"P" "Initialise Printer
250 *International Char. Sets
260 ZJ=CHR(0)+"P"+AAB "US/CA
270 ZF=CHR(0)+"P"+AAB "French
280 ZG=CHR(0)+"P"+CHR(2) "German
290 ZE=CHR(0)+"P"+CHR(1) "English
300 ZD=CHR(0)+"P"+CHR(4) "Danish

```

continued on page 26

Moving programs

Mike Hides moves machine code without taking a peek

HAVING a disk drive is great, no more long waits and the dreaded NO ERROR is now a thing of the past. But I often have need to move programs from one disk to another. This is easy with BASIC programs but with machine code programs, trying to use the PEEKs to find out the START, END and EXEC addresses soon becomes an unproductive exercise. That usually results in lots of memory reads, after loading a BIN file, will display the necessary address details by entering D0000000. Using an assembler the program can be placed anywhere in memory. Listing one shows the program as entered using the ALLDATA assembler. Listing two allows you to POKO the information directly into memory.

How the program works

After a machine code program is loaded from a disk, the Start address is stored in memory at locations 650 and 651 (hex), the program length at 654 and 655 and EXEC address at 656 and 657.

By PEEKing each pair of memory locations and doing a little arithmetic, the addresses can be arrived at.

For example PEEK(650)=H003 and PEEK(651)=H002 will produce the START address. The lower address of each pair stores the low-byte and the higher address the high-byte. The program uses the Y register to store these memory locations (line 40) and is incremented by one in line 203 after each is accessed.

Line 50 uses a POKO routine to clear the screen after which lines 60 and 70 position the cursor in the last screen by loading the value into the X register and storing it in memory locations 68 and 69 (hex). This

value can be anywhere between 1024 and 1535. This is repeated throughout the program to control the position of output on the text screen. The program then jumps to the subroutine LOOP (line 240) which starts by printing the line of text on the screen. This uses a useful POKO routine located at 90E8 (hex) which prints from the address one after that in the X register until a colon is found. The program is then sent back to the

BITOUT subroutine before returning to a new line of text.

To obtain the value of the start address use is made of the fact that 8 bit binary numbers can easily be split into 2 digit hex-address numbers.

In writing this utility the book by Gmeed and Somerville, Inside the Dragon has been invaluable. It is an excellent source of ideas and useful subroutines.

Example

If memory location 652 (hex) holds H100001 and location 653 (hex) holds H000100 then these can be combined as follows:

1000001 is A1 (1010 = A and 0001 = 1)
1000100 is C4 (1100 = C and 0000 = 0)

This gives the Start Address of BH41C4.

To achieve this the binary number has to be split into two halves and each half converted into hexdecimal. Line 209 saves the value of the A register while the first part of the task is completed. The LSHR mnemonic means Logical Shift Right so if register A contained '10000000' (0A decimal) this could change to zero as follows:

```
1000001
LSHR 01000000
LSHR 00100000
LSHR 00010000
```

LSHR 00001000 the value is now 10 decimal or A hexdecimal. This is now sent to the BITOUT subroutine which possibly displays 'A' on the screen. Line

380 restores the value in register A to BH decimal which is sent to the BITOUT routine. This routine first performs a logical AND (line 403) with the value in register A which has the effect of masking off bits 4 to 7, i.e. if register A contained H0000001:

```
10000001
00000001
```

the result of ANDA, BP is 00000001 (1 decimal)

This is sent to the BITOUT routine which prints the character '1' on the screen. Thus the screen now gives the information:

START BH41

The memory location 653 (hex) is examined and the appropriate characters printed on the screen. Using the values previously mentioned the screen now displays:

```
BITOUT BH41C4
LSHRT BH41C4
EXEC BH41C4
```

Finally lines 60 and 70 set the position of the cursor to a convenient place and line 201 returns the control to BASIC.

Listing 1

			180	LDE	BP01H+64	
10		0001	32400	110	STX	000
20		PUT'	98E21	120	LDE	BL1882-1
30	POS	LDU	1053	130	JSR	LOOP
40		LDY	88852	140	LDX	BP02H+128
50		JSR	88A77	150	STX	000
60		LDX	88008	160	LDX	BL1883-1
70		STX	000	170	JSR	LOOP
80		LDX	881HNE-1	180	LDX	BP02H+152
90		JSR	LOOP	190	STX	000

```

200      RTS
210  LINE1  POC  /START  AH/,0
220  LINE2  POC  /LENGTH AH/,0
230  LINE3  POC  /EXEC  AH/,0
240      LOOP   JSR  29000
250      LDE   B1
260      TWICH  JSR  BITOUT
270      LEIA   I,X
280      CDPX  B3
290      LEIA   TWICH
300      RTS
310      BITOUT LDA  ,Y+
320      PSHB  A
330      LEIA
340      LEIA
350      LEIA
360      LEIA
370      BSR  .  DIDOUT
380      LDA  0,0
390      BSR  DIDOUT
400      PULB  A,PC
410      RTS
420      DIDOUT ADDA  #FF
430      CHPA  #9
440      BLS  CHDOUT
450      ADDA  #7
460      CHDOUT ADDA  #0
470      JSR  2954A
480      RTS

```

Listing 2-BASIC header program

```

10  CLEAR 200,32559
20  FOR N = 32600 TO 32723
30  READ A#
40  POKE N,VAL("A#"+A#)
50  NEXT N
60  DATA 10,8E,06,92,8D,8A,73,8E
70  DATA 04,21,2F,98,8E,7F,85,8D
80  DATA 7F,A4,8E,04,61,3F,8E,8E
90  DATA 7F,8F,8D,7F,A8,8E,8E,A1
100 DATA 3F,81,8E,7F,85,8D,7F,A4
110 DATA 8E,04,61,3F,8E,3F,93,94
120 DATA 41,91,54,3D,3D,16,46,90
130 DATA 4C,46,4E,47,54,46,3D,26
140 DATA 46,00,45,58,45,43,20,20
150 DATA 3D,24,48,00,8D,5D,85,8E
160 DATA 00,01,8D,7F,85,3D,01,8C
170 DATA 00,00,26,7F,39,A6,A6,34
180 DATA 02,44,48,44,44,8D,07,A6
190 DATA 24,8D,03,3D,82,39,94,0F
200 DATA 01,09,23,02,8B,03,8B,3B
210 DATA 8D,85,8A,19

```

To save SAVE"NAME", 32600, 32723, 32800

To initiate the program use EXEC31600.

Winners and Losers

Every month, Gideon Lee will look at some prize programming points from a previous month's competition

HOW MANY prime numbers can you pack into a 6x6 grid? This was the essence of February's competition, and one which certainly posed a formidable task. Unlike most of the competitions, there was no absolute solution, the object being to score the highest number of different prime values possible, and judging by the entries received, this was a very hard task, with a difference of only 2 primes separating the top three places.

Table 1 gives the scores and grids of the top six entries received. In the 'grid' column, each competitor's grid is listed across in order. The task itself was not an easy one, and many readers opted for a method using more than one program as an aid to assessing the best strategy to adopt in compiling their final grid.

Basically the task fell into two sections: (i) compiling the grid and (ii) extracting all component values from the grid and testing each for primality.

The grid of these scores is a number of interesting points. Clearly, as all primes with more than one digit must end in either 1, 3, 7 or 9, these digits should predominance in the grid. However, using them to the exclusion of the even digits and 5 would be counter-productive as only a small percentage of possible primes are composed exclusively of 1s, 3s, 7s, and 9s. Hence, the judicious use of the other digits must be considered. As to how many, and where in the grid they should be placed, leads to a near impossible assessment of factors.

Possible grids

Looking at the task from a purely theoretical point of view, there are 1024 possible grids, although this number can be divided by 8 if no account is taken of rotations and reflections of any given grid. Even so, if we calculated these grids at the rate of a million per second it would still take 4,096,000,000,000,000,000,000,000 years to complete the task! Limiting ourselves to mainly to 1s, 3s, 7s and 9s would still take over 18 million years.

On a more practical level, almost all entries used the method of 'seeding' the grid with digits and then attempting to improve their score by altering specific digits in turn. In fact, the highest scoring grid was based on the May 1984 competition grid, which, according to Alan Toulson of Nottingham wrote to say that he



found the puzzle so challenging that it diverted him from his open university studies in the course of his endeavours (in the competition, see COL, for reports the existence of the prime 189901, which is not only prime in both directions, but also if you strip successive digits off from either end. He ends his letter with the note that he intends to try to find some higher-scoring grids. If Mark, or any other readers find any such grids I will announce the results on a future page. In the meantime, here is my own best score — a grid with 176 primes:

3308911983829 8423219 13271795971
9337599

Once the grid has been filled with the 36 digits, no necessary to split it apart all other component numbers and to test each for primality. This has an area which lopped up a number of variants. In fact, only a number of scores were reported as being higher than those in Table 1, but unfortunately they all contained many values which were not

prime, so if you are surprised not to find your scores on the list, please re-check your entries. Other competitors included the same prime more than once, and some even cheated themselves by failing to spot primes that were present in their grids. This was clearly the result of failing to classify their grid completely into its component values. For readers who wish to continue their investigations, in a 6x6 grid there 140 digit numbers, 30 three-digit numbers, bringing the grand total up to 680. Of course, it is impossible to list all these numbers in the space. For example, there are only 21 two-digit primes, and 2024 permutations of them. Available listing the number of primes of varying digit sizes is given. As an aid to readers who are interested in pursuing the problem further.

This means it has been difficult to be specific about particular points from the programs submitted due to the wide diversion of methods used, but hopefully the general points which were outlined may be of use for future reference.

Table 2

Digits	Primes	Lowest	Highest
1	6	1	7
2	21	11	97
3	143	101	997
4	1061	1009	9973
5	8563	10007	99991
6	68606	100003	999993

Table 1

Competitor	Score	Grid
Alan Thomas	156	379349 311933 789193 137577 882743 991291
R. H. Wilson	156	972917 112757 199013 964879 337185 313973
Mark Toulson	151	971171 311279 798292 346735 313977 991291
Phil Sapiro	129	373011 952895 168173 170807 397181 991523
A. Siddiqui	123	317303 198033 179837 346731 334799 311921
G. R. Barber	122	126719 313759 117421 736793 911969 773779

Write: ADVENTURE

Peter Gerard links verb and noun with some action

LAST MONTH we took a brief look at the creation of a simple parser for a dragon adventure, with the promise that this time around we'd be looking at something a trifle more sophisticated. However, as several people have mentioned to me, wouldn't it make more sense to concentrate first of all on the vocabulary of the game, rather than the programming around that vocabulary? Which comes first, the chicken or the egg, the vocabulary or the parser? (Since we seem to be alternating from programming to theory each month, we will switch to theory for this article and take a look at how one might go about building a parser vocabulary for an adventure game. Next month, back to programming again.)

Descriptions and problems

In the parser mentioned last month we concentrated on a simple VERB... NOOB-style of command entry, but it's well worth bearing in mind that the finished product will be rather more sophisticated. Some ideas:

Turn the Key in the Door

Put the Book on the Table

and so on, with the understanding that the parser will try to understand the new parser. The verb and noun are fairly obvious (Turn and Door in the first example, Put and Table in the second), but where do the other words come in and how are they understood? A brief diversion.

Within the parser, accept is a command, so if the player types in all samples all occurrences of the words 'the' and 'it', so that (for example) 'turn the key in the door' becomes 'turn key in door', it will take care for the verb (obviously 'turn' in this case) before selectively going through the rest of the sentence to see what it will look like, but if the player only typed in a verb and a noun, then it will cope with that quite happily. It is the other two words ('key' and 'door') that concern us here.

As you can probably imagine, 'key' could equally well be used as a noun (as in 'Find Key'), for example, but here it obviously is not meant to be a noun, at least not in the old VERB... NOOB scheme of things. It is what I have termed, for want of anything better, a 'linking' word. That is, it helps to link the verb and the noun together.

The word 'in' on the other hand is certainly never meant to be a noun (open the in!), and this falls into a category that I have called 'action' words. Thus, a collection of words whose use implies performing an action of some kind. 'Shove the alien with the phaser' would give us 'shove' and 'phaser' as the verbs and the noun respectively. 'Alien' would, in this instance, become the linking word, while 'with' is obviously the action word.

Dealing with the latter first of all, action words I can be thought of as words like 'in', 'on', 'under', 'beneath', 'with', and so on. No adventure would probably have more than half a dozen of twenty five of them, and they could be read into a simple array by doing something like:

```
16 FOR I = 1 TO 12 READ A$0$1(NEXT) 1600 DATA in,under,in,beneath,with,behind
```

Or something like that. They are, in short, all the words that you can possibly think of that would imply an action of some sort.

The parser starts by trying to look for a verb, then (if it can't find a linking word, followed by (again if one exists) an action word, anfinally a noun. (Only these words are used as in climb under table) then the word 'under' is taken as a linking word. Thus you look for next... in... action... noun in that order. So, as you can probably guess by now, for every action word there must be a corresponding linking word. Like this, for example:

```
20 FOR I = 1 TO 120 READ A$0$1(NEXT) 1600 DATA in,under,in,beneath,with,behind
```

But consider the problem further. We've already seen that link words can also be article nouns, or nice nouns. So, if we have (say) 120 nouns, we would also need a line like:

```
25 FOR I = 1 TO 120 READ A$0$1(NEXT) 1600 DATA in,under,in,beneath,with,behind
```

assuming that all the nouns were stored in an array NOOB. This then gives us a simple equation. The number article words will be equal to the number of action words plus the number of nouns.

Having now decided how the action words and linking words were to be made up (by the former by choosing the words planned, the latter by combining all the action words together with the nouns) how then do we settle on the verbs and nouns in the first place?

Verbs and nouns

Every adventure should have a common subset of verbs that are used in virtually every game that you might write. Some common verbs would be the directions (such as north, south, east, west) and your turn (to up, up-down-as-well, or northeast and all other compass points) if you feel that way inclined, plus abbreviations like n, s, e, w, ne, nw, sw, se, etc. for many players like myself. You can readily appreciate that by having the first dozen verbs made up of:

```
cross, climb, north,south, east, west, up, down, up-down
```

we would also have to have the same dozen first nouns, in case someone typed in go north, or whatever.

Having got the directions sorted out, there are a number of other verbs that should be used in all your games. Not only does this make it a lot easier for you to write, but it also gives the player a sense of familiarity and a little bit of confidence in the knowledge that he can use words that he's already used before. Here I'm thinking of verbs like 'help' (which logically only use if there's enough memory left at the end of the game, it isn't occurring), 'inventory', 'travel', 'restock' (these are 'toad' to recall ones saved progress, as a number of adventures might require you to load a gun, for example, 'get' and 'take' just to be confused with each other, they are not mutually exclusive and nor are they totally compatible: to use an aid example, you take medicine on your 'getmedicine'. In the former you might load something and end up as a 'robust' character, in the latter you might simply be carrying a bottle (armed with poison), threat and threat, 'steal' and 'rob', 'open' and 'close', and so on. I'm sure you can think of many other verbs that should be used in all adventures, but that is enough to be going on with. By including our chosen verbs as well, we already now have 24 different verbs! And all this before we have even really begun to get started.

The rest of your verbs will obviously vary from adventure to adventure, although you may well want to have 'examine' and 'search' in all of your games. The remainder will come from two sources, the room descriptions and the problems, that you have set the player. As a general rule you'll find that most of your verbs come from the problems, while most of the nouns will come from the descriptions. This is obviously not a hard and fast rule, but if you are in the torture (and rare) position of having some spare memory left at the end of the game and you want to use that to flesh out the vocabulary a little bit, then those are the places to look.

So where might you begin? The easiest thing to do is to print out (or type, if you haven't got a printer) all the room descriptions that you're going to use in all your games. No abbreviations either, print out the entire description. You might have a sentence like "You are walking along a cobbled street". What would you do if you were the player, and saw a sentence like that? I for one would want to 'examine' cobbles, but if your abbreviated room description said simply 'walking along street' you wouldn't, as the writer, think of a

Secondly, print or type out all of the problems and the solutions. The very least you can do is that you should be going to be playing your game is to ensure that they can solve them! Taking a 64 location adventure as an example, you might have the player solve 16 problems (so a 1 to 4 ratio is always reasonable). Thus the first thing the player might have to do is to

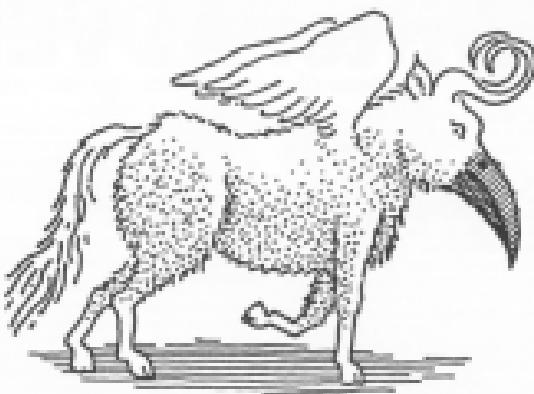
get out of a locked room. Verbs and nouns immediately start to form, and if the situation is the problem requires the player to type in:

LOOK UNDER BUNK
TAKE GOLDEN KEY
INSERT KEY IN DOOR

Then you can see straight away where three verbs are coming from (verb 'take', 'insert'), three nouns ('bunk', 'key', 'door'), an action word ('in') and three link words ('under', 'golden', 'key'). You'll notice that of the three link words, one ('under') is really an action word, while the other two ('golden' and 'key') will also be nouns. All this, and we've only had one problem so far!

Go through all your problems in this manner, and if you find yourself with a totally sprawling number of verbs and nouns (anything more than about a hundred of each is getting a little bit too much for our humble Dragon), then out with the Thesaurus and hunt through for a few synonyms. In other words, try and use different words at different times, so that a player specifically has to type in 'gather', 'collect', 'take' or whatever. Use different words by all means, but do not have a vast amount of separate code for each one. Use the techniques of sorting out specific instances.

Having gone through all your room descriptions (which you have got more or less prepared, hasn't you?) and all your problems (same question), you should be in a very good position for coming up with



what will be almost your final vocabulary list. It wouldn't be, of course, adventures are just like any other program and tend to grow in the writing, so that what started off as a 200 word paragraph becomes the opening chapters of *War and Peace*, but at least it will be a start.

Conclusion

Having done all that, we are now in a very

good position, and can start making contacts after introducing someone. First off, we're going to have to get that parser working properly, having done all the work to produce the vocabulary for it, so try and get everything sorted out for maximum, and try to encourage introducing the parser for yourself. You never know what you might come up with, but don't worry if you give up in disgust. Rescue is at hand next month.

continued from page 20

310 *Take=A&E=4=R+CHR&E=5>* "Save 51.0H
320 *21.0=AE&E=4=R+CHR&E=6>* "It's a sin
330 *TPB=AE&E=4=R+CHR&E=7>* "Spain 1.0H
340 *22.0=AE&E=4=R+CHR&E=8>* "Japanese
1000 "TEST PRINT ADDITION TO PRINT
ONE LINE ON EACH TYPE STYLE
1010 "P. YEDRINN WALKER 1987
1020 *TPB(1)=LNS*
1030 *TPB(2)=LNS*
1040 *TPB(3)=DHS*
1050 *TPB(4)=ENH*
1060 *TPB(5)=DTH*
1070 *TPB(6)=ENH+MDS*
1080 *TPB(7)=MVS+ODS*
1090 *TPB(8)=ENH+MDS+ODS*
1100 *TPB(9)=LNS+MDS*
1110 *TPB(10)=LNS+ODS*
1120 *TPB(11)=LNS+MDS+ODS*
1130 *TPB(12)=LNS+ODS*
1140 *TPB(13)=DHS+MDS*
1150 *TPB(14)=DHS+ODS*
1160 *TPB(15)=DHS+MDS+ODS*
1170 *TPB(16)=CNS+ODS*
1180 *TPB(17)=ENH+MDS*
1190 *TPB(18)=ENH+ODS*
1200 *TPB(19)=ENH+MDS+ODS*
1210 *TPB(20)=ENH+ODS*
1220 *TPB(21)=LNS+ENH*
1230 *TPB(22)=LNS+ENH+MDS*
1240 *TPB(23)=LNS+ENH+ODS*
1250 *TPB(24)=LNS+ENH+MDS+ODS*
1260 *TPB(25)=LNS+ENH+ODS*
1270 *TPB(26)=CNS+ENH*
1280 *TPB(27)=CNS+ENH+ODS*
1290 *TPB(28)=CNS+ENH+ODS*
1300 *TPB(29)=CNS+ENH+MDS+ODS*
1310 *TPB(30)=CNS+ENH+ODS*
1320 *TPB(31)=ODS+MDS*
1330 *TPB(32)=ODS+ODS*
1340 *TPB(33)=ODS+MDS+ODS*
1350 *TPB(34)=LNS+ODS+MDS*
1360 *TPB(35)=LNS+ODS+ODS*
1370 *TPB(36)=LNS+ODS+MDS+ODS*
1380 *TPB(37)=CNS+ODS+MDS*
1390 *TPB(38)=CNS+ODS+ODS*
1400 *TPB(39)=CNS+ODS+ODS*
1410 *TPB(40)=ENH+ODS+MDS*
1420 *TPB(41)=ENH+ODS+ODS*
1430 *TPB(42)=ENH+ODS+MDS+ODS*
1440 *TPB(43)=LNS+ENH+ODS+MDS*
1450 *TPB(44)=LNS+ENH+ODS+ODS*
1460 *TPB(45)=LNS+ENH+ODS+ODS*
1470 *TPB(46)=CNS+ENH+ODS+ODS*
1480 *TPB(47)=CNS+ENH+ODS+ODS*
1490 *TPB(48)=CNS+ENH+ODS+ODS*
1500 *TPB(49)=ODS*
1510 *TPB(50)=ODS*
1600 FOR N=1TO50
1610 PRINTE=2,N;TPB(50);"
1620 NEXT N



Pete GERRARD'S ADVENTURE TRAIL

A STRANGE parchment, concerning Colonial Cuban adventure (published for the Dragon by Creative Software, 23 Bristol Avenue, Manchester M16 3AU, for £4.95), has totally intruigued me recently. It occurred to me that it might be of interest to anyone attempting to wade through the larger than usual Dragon adventures...

JULY 1st

Some holiday this has turned out to be. That I, Professor Deadrock, should be stuck on an 18th-century ship with a bunch of nautically-puzzled pirates, the very feeling of their Walkman setting my teeth on edge, is intolerable. Fortunately, accommodation at the odd house is better than expected, and having equipped myself with footlock wrist band (picked up some keys) and a lamp which had been carelessly discarded, set off tomorrow and hope to leave my younger acquaintances behind.

JULY 2nd

Latitude lost, but soon found myself following an odd stream down a valley. All water eventually disappeared through holes in ground, and stared at enormous steel gate for some time before obvious solution sprung to mind. Took key and it worked! Hung on to key, though, have strange feeling that it might yet come in useful again. Walked underground some way, turned light on, and spent inauspicious night in small chamber. Strange footstep constantly invaded my dreams.

JULY 3rd

Walkman now just a nightmare, although am haunted by fear of bumping into Amekai-Rios. Thought my fears had turned to reality, but it was just a beauty dwarf who scurried away into the gloom as I scolded him. Can these are not after all achievements? Only missed, otherwise he would have felt the rough edge of my tongue and no doubt unusual objects to be found hereabouts, and have added a glaive/longsword and a black and fiery lot of possessions.

JULY 4th

Spent several hours puzzling over said house in splendid chamber. These not at the thing in disgust, which missed, of course and sailed merrily on into another room. Said not more than content to be caught and placed in gated cage. What would David Attenborough have to say about that? I wonder? Retrieved, not somewhat dramatically.

JULY 5th
Found myself in a used hall. To one side, in a low room, was a gold ingot? Decided to leave it where I found it, country code and all that. Wheeling Hall of Mountain King to myself, as I am wont to do in moments of crisis, when faced, answering whether Large snake in part, rocky cave, refused to move. Black's tentacle now getting on nerves streak, so thought "teleported with one snare" and fed it to the reptile in the hope that, being eaten, it would go away. Imagine my surprise when writhing tentacle attacked and killed snake! Suppose blessed thing wants feeding now, but we Deadrocks can be hard-hearted at times. These tagalog creatures, I am fairly convinced that that's the last I'll see of these two items.

JULY 6th

Unusual happenings. Was strolling back towards well house (predicted coming up with some unusual goings in debris room where'd I'd find log-cabin/black rod, XYZZY) I repeated it sounded like zzzz to me! and was immediately overcome by strange, giddy sensation, and found myself in the well house! Then I come to Paul Daniels to puzzle over Mutterer's XYZZY again, but Anyana listening, and back in debris room again! Hurried about, collected gold map and roadbook to wellhouse to store it safely, assuming any of my fellow Holiday makers can be trusted. Said XYZZY once more, and spent a pleasant night in debris room. Much to parasite.

JULY 7th

All sorts of weird leading from this hall of maps. Had found some coins (placed in back pocket for safe keeping) and some jewellery in a south side chamber (must take it back to base sometime) when stumbled across area almost into the east bank of a ridge feature. Heavy overbalance, it seems to be falling into blessed thing, and waved not so steady myself. Could hardly believe my eyes when a crystal bridge appeared there wherein to span the chasm. One of Amakai's fine, if unusual, achievements.

JULY 8th

Crossed bridge, stuck out bridge, and sat on west. Found some diamonds (must look that) and placed rock-candy on ground next to them. Am highly uncertain about that rod. A rock well-burned if you ask

me. Returned in some haste to east, back to the unoccupied castle, and went north to the hall of the mountain king. Came to north, and soon in north-south passage (Silverberg's snarfed, my lucky day coincides). Climbed on to rocks, and saw a large 'Y' carved on a rock. Why 'Y'? I quipped, and no sooner had I spoken than a hollow-voiced said "pugil". "Say Pugil to you too" I said about to retort, but barely had I spoken the first two words when was overcome by strange giddy sensation once more. I took back in the well house, and found that the started gaze of my fellow holiday makers (gold ingot still there) I (nervously) whispered "pugil" quietly. Was back in QC room. Cycled up next to rocks and fell instantly into inclosed sleep.

JULY 9th

Decided to leave belongings here for time being. Perfected on bird, now no doubt wandering aimlessly about the caves. Tried to identify species, couldn't quite place it, and in momentary pang of conscience must have spoken loud. Perhaps it was a plover, and he (she) had I said the words "say, power is a possibility" when rooms were giddy and found myself in something called the poison room. A large cobra that my surprised gaze. Tried to carry it out of room but couldn't! I thought small enough to wear. Dropped everything save emerald, breathed in, and managed to squeeze out. Darkness! Dropped emerald in my robes and raced back into poison room and my belongings. Picked up lamp again and looked around. A large plumed pyramidal. I can sense! Again casting a proprietary eyeroll that there, and without fail "pugil"! I was back again 'Y' rod again! Phew! One is rapidly becoming accustomed to strange magical events on this holiday.

JULY 10th

Forward of thought good tools was going on long and narrow with measures when, scarcely two inches from the 'Y' hole, a bearded pirate pounced on me and stole my treasures! Tricky-pirates! pirates gave chase naturally and found myself in the west end of the hall of mists. West south, and I didn't know of such a parlous passage, all the same. Blundered about in my terror, heading first east, then south, south and south again, north, off to the east, north, east, then finally in my desperation north west. Lo and behold, a pirate's treasure

chees, plus all my original treasures. Blundered them all together, staggered under the weight and headed northeast, north and north again I was back at Y2. Muttered "Thank plug for that" and of course was once more whisked to the next room. Dragged all treasures, back to Y2 once again, and discovered had left eggs in back pocket after all. Couldn't be bothered with them, and fell soundly asleep.

JULY 1986

Holiday nearly over, and batteries of lamp starting to run out already. Went to hall of nests again, stumbled west and west once more into a long, featureless hall, then nearly hit south into a maze of twisting passages. Also these are all different, and hurried in desperation, turning west, north, east, east, east and east a fourth time. In front of my tired eyes I saw a large vending machine! Instantly took cover from thought and I deposited my coins into the machine, frantically started fresh batteries, fed out, and then lay back. Their judgement managed to turn west and then east in my confusion. Back to the featureless hall again, unless I soon hurried home to Y2. Strange how one comes to regard these places as "normal" after a while.

JULY 19th

A determined effort to see this thing through, now. From Y2 I went down and west, down and west, until I stumbled across bedquilt. For no other reason than I was there, went west into a room whose walls resembled swiss cheese, but being unable to stomach cheese under any circumstances I turned east again... into a different room! A soft pat on my head was before me, so I picked it up and turned east, going east wouldn't work. I attempted to go west but stumbling too and east north west instead. An ominous room, with a thing called "Placesback to Y2" plugged in my ear. And was about to drop into my grave to the face where the pillow fell from under my arms and landed first. Fortunately it took the fall of the nose! Placesback to Y2, could sense time running out, and once more to the ominous room. Headed north and then west into a small alcove where, much to my amazement, the emerald was still waiting for me. Picked it up, scanned around as luck would have it was back in the swiss cheese room again. Headed roughly west and up into a secret north-south corridor, then going south to try and escape I found myself nose to nose with a fire-breathing dragon! Pan my soul I had no time to spare, and in horror at this threat knew that fate had dealt it back to the board itself! I should have known, with the combination of years lost into the animal land before the rise of an Englishman, having behind a rather bad egg, further consideration for the west house. Scuttled back to Y2 and then the west house once more, depositing emerald and my head to my rapidly growing pile of treasures. Time will not defeat me now, I am confident.

JULY 19th

An insupicious date on which to explore further, but find myself driven by powers beyond my comprehension. Fornic into swiss cheese room, then east into

hallway (as that was pit room). Tripped over lots of rock and fell into westernmost pit, almost smothering a small plant, which resulted "water water" of me. Took pity on it and watered it copiously. Petty treasures scattered and others, the thing grew at a staggering rate, and had the nerve to tell me "water water, water!" of me. Roamed around for some more, and even more! I doves this thing. It grew exponentially, but I didn't get where I am today by skipping these things unperformed. Out of oil, out, then as chance would have it I happened across a stone and fell down into the eastern pit this time, into a small pool of oil. Flicked bottle, back to plant, climbed it, and an enormous set of caves until progress stalled by rusty door. Dived it, went in and found a client and a nest of golden eggs! Some who had somehow been too far on the east, as illogic obvious.

JULY 14th

Last day of holidays. Explorer arms, and found myself in a large rectangular bedquilt, with a claim on it. Places thing wouldn't open, so sprawled for possible instant and sleep again. Dragged open, gear fell out, and naughtworthiness ensued. Placed treasures back to wellhouse, but kept eggs, food key and lamp with me just in case. Explored near bedquilt, and central room, and found myself on a rocky ledge just in front of a deep chasm. On a leap, that appeared to block my path. Could spare him no time and threw the eggs at him. He vanished and I fairly sped across, until I was in a room with a large bear. Not thinking, I threw my food at it, and it calmed down. Once I had undone the golden chain

that snared it to the wall followed me like a tempt, evoking great interest in some stone spiders that I had found. Back to the ledge, and dropped the bear in front of saying the last again. The bear roared after the last, which now sounded a mere expression, and I contemplated myself with the thought that the two would, given time, manage to cross, the great stone gull that divided them. Went back to read strange writing on wall where I'd first found the eggs, and said "See for thy loss to myself. The eggs reappeared! Was about to race home when voice told me that caves were closing. Couldn't get out. Floundered around, found myself transported into strange room with lots of rods, birds in cages, snakes, and all manner of things at once familiar and frightening. Picked up a rod, threw it away, went into another room and said "blast" when I couldn't mind the last. Some hidden mechanism went off, a vast explosion carried me with it, and from another bundle of clearing rods, appeared and carried me off in praise and glory. What would Amara Rose make of this, I couldn't help thinking?

JULY 15th

Am on my way home, laden down with treasure which I shall probably auction. I see the 10-50 clubs is organizing yet more holidays. Perhaps I shall go on one when they do.

ME AGAIN

How could a cheap like Professor Dreadlock solve a complete adventure game, just like that, when the rest of us struggle for seconds and months? Perhaps we shall never know... bye for now!

Adventure Contact

To help puzzled adventurers further, we are installing an Adventure Helpsite — simply fill in the coupon below, stating Name(s) of the adventure you played and your name and address, and send it to Oregon User Adventure Helpline.

Adventure

Problem

Name: _____

Address: _____

Q43, Unit: Newport Street, London EC2W 1PP. As soon as enough entries have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Time to write to as well!

Communication

Problem: Does anyone have a DOS version of *Elfquest* or can supply it? By the Dragon or Sandy, that's going to be a nice one of the Dragon's *Dragon* version.

Name: Maarten "AMU" van Wermes
Address: 3 Lymersmeadow, Cheshire CH3 0DD, Britain

located the *Amu* first!

Name: P. Novak

Address: 48 Calverton, Peterborough, Peterborough, Cambs, PE1 6BB.

Problem: Has anybody got a copy of *Elfquest*? I have managed to obtain version 1.040, have no hard copy and cannot remember where the program came from. Line 1000 reads PRINT #1;"4+1" 64+6.05#(1,1); —

Problem: I have a copy of *Elfquest* and would like to copy the crossover grids without losing onto a hard copy. Does anybody know of a way of doing this? Any help would be most appreciated.

Name: Geoff Roberts

Address: 78 Appleby Lane, Handbridge, Chester, Cheshire CH4 3DT.

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Make a note

Feeling crotchety? Sound out Gordon Lee's latest puzzle

LAST MONTH, while discussing some oddities connected with the number 7, we noted that, of all the digits, 7 was the only one for which there was no easy test for divisibility. By 'easy test' we mean a quick method by which we can determine if a given number is an exact multiple without having to actually work it out. Before the advent of computers (and pocket calculators), this was often an important consideration, and such tests and tricks could be spared by use of such tests. Even with the use of computers, knowledge of these tests can still have their applications. For example, a computer may be quicker (and so speed the execution of a program) or the mathematical accuracy of the computer may be pushed to its limit and possibly produce questionable results. Again, the number under test may be longer than the nine- or so digits that an eight-bit micro can handle.

Outlined below are some complements for divisibility by numbers from 2 to 10, without, as has been mentioned, the number 7. 'Divisibility' means exactly divisible, without remainder:

- 2: A number is divisible by two if the last digit is even.
- 3: If the digital root of a number is divisible by 3 then the number itself is also divisible by 3. Not quite so well known is the fact that if this digital root results in a remainder, this is the same remainder that would occur if the actual number were divided. For

example, the number 1234567894321 has the digital root 4. This leaves a remainder of 1 when divided by three, so the 10-digit number itself would leave this remainder. Readers who are not familiar with the term 'digital root' should refer to the page of February's Dragon User.

- 4: If the last two digits of the number is exactly divisible by 4, then the complete number will (it doesn't matter how many digits are in the actual number). So long as we know that fact, we can establish the test for divisibility. Any remainder will then resulting from division into the complete number.

An everyday use of this test is in determining leap years. If the last two digits of the year is exactly divisible by 4, then (subject to certain other considerations) the year is a leap year.

- 5: Only if the final digit of the number is a zero or a five, is the number exactly divisible by five. Any excess over zero or five, will indicate the remainder.

- 6: As six is the product of 2 and 3, every multiple of six will pass the test for both 2 and 3. In other words, it must be an even number with a digital root divisible by 3. Take the last three digits of the number. If this is divisible by eight, then the complete number will be divisible. If there is any remainder, then this represents the remainder from the complete number. As a general principle, this applies to all powers of 2. Thus, to test for divisibility by 2n, it is only

necessary to consider the last n digits of the number. Therefore, to test for divisibility by 16 take the last four digits, and so on. 9: The test for nine is similar to that for three. If the digital root of the number is nine then the number need is a multiple of nine. Otherwise, any remainder will be the same found in the actual division. For an example of this test see Problem 3 on the competition page of last August's Dragon User; another solution goes the following month.

- 10: This is really too obvious to need stating, but a number divisible by 10 must end in zero. If it does not, the final digit will equal the remainder.

- 11: To test for divisibility by 11, start of the units digit and add every second digit, proceeding to the left. Call this total A. Now, add together the other set of alternate digits and call this total B. Find the result of A minus B. If this result is a power of eleven, then the number is divisible by eleven. To locate remainder if the division is not exact, either if the total is positive, subtract the highest multiple of 11 which is less than the total. This will be the remainder. If the total is negative, add a multiple of eleven to bring the total to just above zero. This will be the remainder.

For example, the number 4210000001 should be tested as follows:

$$\begin{aligned}A &= 1 + 1 + 0 + 0 + 0 + 0 + 0 + 0 + 4 \\&= 6 + 0 + 0 + 7 + 0 + 0 + 0 + 0 + 0 \\&= 13 + 0 + 0 \\&= 13\end{aligned}$$

To minus 13 add the next highest multiple of eleven (22) that will make the value positive. The result, 9, indicates the remainder.

In this column in the past, it has been remarked that all palindromic numbers with an even number of digits must be a multiple of eleven. With the above proof, this statement is not difficult to understand.

And, finally, '11' is the product of 3 times 4, so all tests of these numbers should prove positive for all multiples of twelve.

This concludes the quick survey of divisibility tests, which may prove useful to number theorists, and potential competitive solvers — and it's nice to see the competition is making boyish ads. Didn't we have a musical competition in more ways than one?

Programmers this month can try out a copy of the new MUSIC MAKER routine from John Penn Software, and the competition is based on the name of this program.

Using the words MUSIC MAKER, take the nine digits 1 to 9 (zero is not used), and assign a different digit to each different letter in the above name. This must be done in such a way that the five-digit values represented by both MUSIC and MAKER are both perfect squares.

In how many different ways can you carry out this task, if it is to calculate that for each pair of values, MAKER is higher than MUSIC?

Prizes

MUSIC MAKER is a new package which will play musical files (up to 16 parts), teach you to read music (if you like), and save your tunes as machine code routines. John Penn Software has contributed ten copies of this, one of the few full price packages on their extensive list, for the ten most inspired entries. The ten winners will get £200 discount vouchers from the Penns.

Rules

Unquestionably the wise words of Gordon Lee, compose your responses, get your Dragon to e-mail them a postbox, and mail your copy, with any notes you need to add, to Dragon User in an envelope marked JULY COMPETITION. Don't forget to include your name and address. Don't forget to include our name and address, either.

Now for this month's competition (go on, ask me to write a rhyme...) I want one or two of those 'songs by singers' titles which have been the responsibility of other players during the days of Astro.

You know, 'How much is that doggie in my window' by Bach, 'The song is over' by Butter String. That sort of thing. As many as you like, but one sharp one beats a dozen flats. Extra points for Dragon references.

April Winners

Shewell I thought. Not many entries ... then I found an April entry of the Maypole and a May on top of the April pile. Panic over.

Panic begins again. Really took a lot of sifting, that lot.

Thankfully about copies of Langwood, the ultra popular semi-adventure from Microdad. And they're sitting on my shelf ready-to-go. The lucky recipients are:

M. Amineh of Basingstoke, J. Heave of Hove, Fred Wilkins of Sandford (post poem, definitely, but too long to print here), Alan Thomas (second best poem), Clive C. Scott of Ashstead, Terry Poller of Chesham, Dennis C. Mulvey of Chesham, Phil Rogers of Liverpool, John S. Blaize of Aldershot, PG Masbod of Taplow, Ian Higgins of Caversham, Colin Miller of Cambridge (so you don't see a line please, Colin, your address is indecipherable), P. Christian of Thirsk, E.A. Newman of Addlestone, Robert J. Tolman of Sale, David Larkham of Reddish, Longdon-on-Clyde, P.J. Taylor of Aikham, Keith David of Crowthay and S.A. Sloboda of Chiswick.

Just for the record, the most popular rhyme for 'tangie' was 'wings'.

Solution

The answer will appear in the next issue.

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